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INCORPORATING

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Harold W. Clapp

RECOGNITION has once more been given to the value of experience in the many-sided world of railways as a qualification for eminent national posts. Mr. Harold W. Clapp, Chairman of the Victorian Government Railways Commissioners since 1920, has, as recorded on page 215, been appointed by the Australian Government as General Manager of Commonwealth Aircraft Construction, an honour which recalls the selection of Mr. E. J. H. Lemon last year by our own Air Ministry to be Director-General of Production and a Member of the Air Council. But whereas the L.M.S.R. has merely loaned its Vice-President to the Ministry, the Victorian Railways have relinquished their claims upon a Commissioner to whom they are indebted for an eminently successful outlook and policy. Mr. Clapp instilled into them the slogan of service and the importance of sympathetic relations with the public. He personally undertook a tour of investigation overseas five years ago, as a result of which he introduced new facilities and practice on the system he controlled which have entitled it to rank among the most modern in the world. The good wishes of the Victorian Railways staff to Mr. Clapp in his new appointment will be expressed with an unusual depth of personal feeling

on account of his energetic interest in staff welfare and education.

* * * *

An Expert Witness

Mr. C. E. R. Sherrington, Secretary of the Railway Research Service, recently had the honour of being invited to appear before a judiciary sub-committee of the U.S. Senate, formed to consider the Railroad Reorganisation Court Bill. Mr. Sherrington spoke on the principles and practice of railway amalgamation in Great Britain, and then engaged in a discussion with his audience, but, as our contemporary the *Railway Age* says in reporting the event, he refused to commit himself at any time during the discussion as to what might be the solution of the American railway problem. Mr. Sherrington drew a distinction between the process of railway amalgamations in this country and in the U.S.A. In the United States property cannot be taken without due process of law, and bondholders have a tangible lien on the property of a railway company, whereas in Great Britain there is no appeal on the ground of constitutional rights against a law enacted by Parliament. Mr. Sherrington concluded by giving the U.S.A. equivalents of the wages paid to various grades of British railwaymen, and two senators expressed the view that they would have less trouble with the railroads if their own wage scales were not so high.

* * * *

The Week's Traffics

Increases totalling £1,193,000 compared with the corresponding week of 1938 are recorded by the four main-line railways this week. Last year, August Bank Holiday fell a week earlier so that the figures below are really better than they appear at first sight, because they do not include the full holiday period. The biggest increase is that of the L.M.S.R.—£534,000. There is also an increase in the aggregate total for the 31 weeks of the year amounting to £1,678,000. To this total the G.W.R. contributes £618,000 and the L.M.S.R. £614,000. The Southern total for the year to date shows an increase of £38,000. As regards Irish aggregates, the Great Northern figures indicate a rise of £42,900, and those of the Great Southern a rise of £31,665.

	31st Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	%
L.M.S.R. ..	+ 236,000	+ 184,000	+ 114,000	+ 534,000	+ 614,000	+1.61
L.N.E.R. ..	+ 77,000	+ 98,000	+ 69,000	+ 244,000	+ 408,000	+1.48
G.W.R. ..	+ 116,000	+ 121,000	+ 68,000	+ 305,000	+ 618,000	+3.89
S.R. ..	+ 66,000	+ 29,000	+ 15,000	+ 110,000	+ 38,000	+0.29

London Transport receipts are up £7,300 and show an increase on the five weeks of £92,500.

* * * *

Railway Wages

We reported last week at page 185 that a meeting between the railway general managers and the Associated Society of Locomotive Engineers & Firemen would be held on August 4 to consider the demands of the union concerning which a threat of strike action had been made. Questions of the procedure to be adopted at the meeting arose and were not cleared up in time to enable the meeting to be held on the date mentioned but, by agreement, arrangements were made for it to take place yesterday, August 10. We close for press before learning the result, but it is interesting to note that the attendance of the representatives of the Associated Society of Locomotive Engineers & Firemen was contingent upon it being a meeting between the companies and the society only. The society contended that the items in dispute between it and the general managers are separate from the items of other unions which have been under negotiation. Meanwhile, the

society's membership has been circularised with the object of obtaining support for plans for withdrawal of the labour of drivers, motormen, firemen, and engine cleaners, if satisfaction of the society's claims is not secured. We refrain from comment at the moment, especially as a special delegate conference of the National Union of Railwaymen is at present in session to consider the companies' offer (dealt with at page 164 of our issue of Friday last) concerning the minimum wage.

* * * *

Overseas Railway Traffic

This week a month's results have to be reviewed, our comments under this heading having been unavoidably held over a fortnight ago. Central Argentine weekly increases during the period have ruled round about the figure shown, reaching a maximum of £39,066 in the third week. The Buenos Ayres Western made its best showing in comparison with 1938 in the fourth week, when its increase was £6,390. The Buenos Ayres & Pacific had a setback in the fifth week, showing a decline of £5,769—but an increase of £7,072 in the third week helped it to show a net gain of £2,233 on the month.

	No. of Weekly Week Traffic	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
Buenos Ayres & Pacific ..	6th	76,799	£ 806	395,162 + 4,342
Buenos Ayres Great Southern ..	6th	118,176	- 4,405	609,988 - 53,040
Buenos Ayres Western ..	6th	38,275	+ 2,853	219,294 + 17,372
Central Argentine ..	6th	134,246	+ 31,253	688,989 + 139,218
Canadian Pacific ..	30th	815,400	+ 6,500	14,693,000 + 217,400
Bombay, Baroda & Central India	16th	199,725	+ 10,650	2,708,025 - 60,000

Canadian Pacific earnings have gained £118,800 in the thirty-day period reviewed.

* * * *

The Jamaica Government Railway

In our Personal columns this week we publish the portrait and brief biography of Mr. H. R. Fox, who was recently appointed the first General Manager and Chief Engineer of the Jamaica Government Railway; formerly the principal executive officer was known as Director. Incidentally, the Jamaican system, which is of standard gauge and 210 miles in extent, claims to be the oldest steam-operated railway in the British colonies, the first train having run over its lines in 1846. The principal source of traffic to-day is bananas, but owing to the steep grades and sharp curves occasioned by the mountainous country traversed it is a line which is expensive to work and maintain, and is, unfortunately, passing through the worst financial period in its history; the expected deficit this year is £120,000. The General Manager is, however, carrying out a gradual reorganisation of the railway, with the result that expenditure is being steadily reduced.

* * * *

Railway Reorganisation in Jamaica

Among the more important measures at present being taken to reduce operating expenditure on the Jamaica Government Railway, is the introduction of light diesel railcars and petrol motor patrol or permanent way trollies. If these railcars prove successful, the General Manager intends to extend their use gradually to replace the existing steam passenger services, which are now worked at a loss approximating to £20,000 a year. Another innovation in Jamaica is the appointment of commercial assistants to assist the management by the canvassing of and personal contact with the traders, and by this means it is hoped to secure a larger volume of freight traffic. Their value in meeting road competition is also expected to be great, and it is this competition that is so adversely affecting traffics. By thus combining the advantages of modern operating and commercial methods, this interesting railway should soon be on a sounder financial basis.

The First Course

There has been some correspondence in the *Sunday Times* on the essential differences between luncheon and dinner, and criticising a tendency in this country to regard dinner merely as a longer lunch. The writer of one letter begged our country hotel-keepers to get out of the habit of beginning a luncheon with soup, for soup should belong only to dinner and lunch should be opened with *hors d'œuvre*. This correspondent might well have extended his plea to embrace railway catering departments, and the substitution of *hors d'œuvre* for soup on luncheon menus in restaurant cars. Within the limitations of time and space imposed by the service of meals on express trains, there cannot be great scope for variety and choice, but the suggested plan would be an easy way of breaking with a somewhat rigid tradition. It is a feature of Wagons-Lits catering on the Continent which we have certainly never heard criticised by British travellers abroad, and so should have a cordial reception here.

* * * *

A "Partial Eclipse" of the Railways

The four-hour black-out arranged for the early hours of yesterday (Thursday) morning, but deferred for 24 hours owing to weather conditions, has been planned to place the Southern parts of England in complete darkness. Or almost complete, for, except over a part of Norfolk, it is impossible for the railway companies to co-operate fully with the Home Office and the Air Ministry without causing serious dislocation to essential traffic handled at night in mid-week. They are, however, dimming and shading their lighting wherever this can be done, and running passenger trains with the compartment blinds drawn. In a statement announcing the share they would take in the black-out, the railway companies said that they were taking steps which would enable them to comply fully with lighting restrictions in war time. It will be remembered that in the editorial columns of our July 28 issue we outlined some of the ways in which the railways were tackling the problem of obscuring themselves and their activities in "a state of emergency."

* * * *

The Partition of the former Czechoslovak Railways

The various political changes of the past year which have resulted in the disappearance of Czechoslovakia as a political entity have had the consequence of dividing the former Czechoslovak State Railways among no fewer than five owners, and in view of the fact that the final delimitation of some of the frontiers has been effected only recently, it has proved impossible to secure accurate particulars of the disposition of the railway mileage concerned. Now, however, it seems fairly clear into whose hands the various sections of line have passed, and the following figures would seem to represent the position accurately within a very small margin of error. The length of line owned by the former Czechoslovak State Railways (inclusive of private lines worked by the administration) at the beginning of 1938 was 13,297 km. (8,262 miles). In October, 1938, Czechoslovakia ceded to Germany the territory known as Sudetenland and with it there passed to the Reichsbahn 3,397 km. (2,110 miles) 878 locomotives, 1,784 passenger carriages, and 21,980 goods wagons excluding service wagons. Subsequently the state of Czechoslovakia in its reduced form divided itself into three autonomous provinces. The first is represented by the Protectorate of Bohemia and Moravia which has State Railways now given as totalling 5,925 km. (3,682 miles). The second province is the State of Slovakia, a separate country closely allied with Germany, with State Railways amounting to 2,265 km. (1,407 miles). The third province

namely, Ruthenia (or Carpatho-Ukraine) has become incorporated in Hungary, but Hungary has actually inherited more mileage than was formerly in this province, for it took over also a strip of Slovakia, and in total has acquired 1,530 km. (950 miles) of railway. Finally, the annexation by Poland of the Teschen district resulted in Poland acquiring about 180 km. (112 miles) of railway.

* * * *

"On Time" in the Far North

North of Inverness for a hundred miles stretches the "Scandinavian Peninsula" of Scotland—the three shires of Ross, Sutherland, and Caithness. It is a district traversed by but two lines of railway of the Highland Section of the L.M.S.R., one of which runs northwards from Inverness to the ports of Wick and Thurso, and the other westwards to Kyle of Lochalsh. In winter it is often necessary to fight snowstorms, with snowploughs and snow fences as weapons. In the July issue of "On Time," the journal of the L.M.S.R. Operating Department, are given some interesting facts and figures about the working of this remote section, which comprises 235 miles of line—only about 40 miles of which are double-track—controlled from Inverness, the most northerly district office on the L.M.S.R. The Class "5" mixed-traffic 4-6-0 locomotives work the principal trains except on the Kyle of Lochalsh line, where sharp curves forbid their use. About 90 engines are stationed at Inverness and its sub-depots. Sheep and cattle are by far the most important traffic; the L.M.S.R. ran nine empty-vehicle trains to one recent sale, from which were afterwards dispatched 16 specials with livestock. Last year, 17,600 trucks of livestock, conveying 863,371 sheep, 65,041 cattle, and 21,709 pigs, were forwarded from stations of the district.

* * * *

A Signal that was usually found "Off"

Some unusual features distinguished the collision at Stobcross, L.M.S.R., on February 22, 1939, as will be seen from our summary of Major G. R. S. Wilson's report on page 218. Contrary to the block regulations the signalman accepted two converging trains, one of which passed the home signal near the fouling point—a ground signal in a tunnel—at "danger" and was stopped by another signal a little farther on. Its driver felt little or no concern at missing the first signal because, Rule 39(a) not being applied at Stobcross for up passenger trains to avoid stopping them in the tunnel, he had never once found it "on" at any time during the 11 years he had been travelling over the route. The signalman could give no clear explanation of his mistake in accepting two trains, but he must have taken one of them on without realising he had done so. His instruments were of the two-position semaphore indicator type, but fitted with an additional indicator, showing "train on line" for the section in rear when required. Inspection of these indicators would have shown him that he had already accepted the train which was later struck and about whose movements he began eventually to feel some doubts. He pleaded that there was some pressure of work at the time which distracted his attention and was much distressed at his failure.

* * * *

Visibility of Signals in Tunnels

Also arising out of the Stobcross accident report is the problem of securing adequate visibility for signals in tunnels. This has, of course, always been a difficult one, especially before electric lighting was available. Even with it, however, much difficulty remains on steam-worked lines where bad atmospheric conditions will blot out the signal aspects. When signals are regularly cleared for a train as soon as it is known to be coming, Rule 39(a) not being

imposed, as in this case, it is easy to understand that drivers should not be concerned too greatly if they fail to see them now and then. There have been many examples of electrical signals outside tunnels repeating mechanical ones inside, very helpful in some cases, and of gong devices to assist drivers in observing the signal indications, with location lights near the point where the signals are placed, and so on. As stated in an editorial note in our issue of May 20, 1938, page 971, the French railways have obtained very effective results at Rouen, Lisieux and elsewhere with neon tubes as signals in smoky tunnels. Such tubes provide an indication that is not seen for a moment only, but is visible by radiation over quite a distance along the tunnel wall level with the driver's cab. The distance in the case of the French installations is 40 ft.

* * * *

Poppet versus Piston Valves in India

Considerable knowledge has been gained in India of the relative merits of poppet and piston valves for locomotives, and this aspect of the subject was debated after the reading of a paper by Mr. G. da Costa on "The Indicator Diagram," at a meeting of the Institution of Locomotive Engineers at Bombay. One of the speakers agreed with the author's contention that cam-operated valve gears were capable of producing correct valve events at all cut-offs. Such gears would, however, have to be improved before results of the kind indicated by the author could be obtained. Competent authorities were investigating the net results obtained on the G.I.P.R. from the equipping of many locomotives with two types of poppet valve gears, and until it had been proved beyond any shadow of doubt that these valves showed a considerable saving compared with piston valves it would be unadvisable to extend their application. Another speaker, while agreeing that cam-operated gears had shown excellent results in many cases, asserted that their maintenance cost was Rs. 600 per locomotive per annum. The author, in replying to the discussion, said he regarded that figure as representative in present conditions, but he considered that with further experience of the gears it would be possible to reduce the figure to Rs. 450 against the rate of Rs. 350 to 400 per locomotive per annum for piston valves.

* * * *

Exodus in Numbers

Tradition dies hard. Twenty years ago our first association with that notorious day preceding August Bank Holiday convinced us that for railway movement on a titanic scale "Black Saturday" had but one rival—the equally notorious and subfusc day one week later in the calendar. Time has marched on and the travelling public has, in the intervening period, been besought to distribute its favours among five other days in the week and at least three other months in the year; yet a five-hour scrutiny of traffic at a well-known junction near London last Saturday (somewhat blacker, meteorologically, than the average), served little to shake our previous conviction. There they sat, ninety train-loads of pleasure-seekers, like Tennyson's gods "beside their nectar, careless of mankind" and blithely ignorant of feats of organisation demanding months of brainwork and hard labour; even those who could not sit remained cheerful in adversity, and frankly we admired them all. As we came away, however, one query struck us forcibly. What will be the outcome of an increase in remunerated holidays without any commensurate "de-Saturdayising" on the part of the beneficiaries? The long-suffering pint pot being called upon miraculously to accommodate a gallon seems, *ceteris paribus*, to be the only answer.

Railway Freight Rebates

IN the course of its "square deal" report, the Transport Advisory Council remarks that, in the event of its proposals for the correlation of road and rail freight charges being accepted by the Minister of Transport, the Railway Freight Rebates Scheme will require to be reviewed. Having regard, therefore, to the benefits which this scheme has for certain sections of industry, it is appropriate to recall its main features. In 1929 the Local Government Act was passed for the purpose of relieving industrial hereditaments generally from the payment of three-fourths of their local rates as a means of stimulating trade and industry. In the case of the railway companies, however, the Act provided that they should receive this relief only provided that corresponding sums were paid by them into a Railway Freight Rebates Fund, from which they were to be used to assist trade and industry by the grant of rebates from the railway charges on certain important traffics mentioned in the Eleventh Schedule to the Act. Thus the railway companies were, in effect, a conduit pipe through which rating relief in respect of the railways was passed on to the traders. As a result of the reduced valuations of the railway undertakings under the Railways (Valuation for Rating) Act, 1930, the sums payable into the fund were substantially reduced in 1937 and since the passing of the Railway Freight Rebates Act, 1936, the rebates have been confined to exported coal class traffic, livestock, and milk. At the present time the rebate payable in respect of exported coal class traffic is 1½d. per ton plus 26½ per cent. of the balance of the conveyance charges, or, if a toll is charged, 31½ per cent. of the toll, while, in the case of milk and livestock it is 16½ per cent. of the conveyance charges. The value of the rebates to the traders concerned can be visualised from the fact that about £4 millions were paid out annually during the seven years ended September 30, 1936, while from that date they have been just over £1½ millions annually.

The fund is administered statutorily by the Railway Clearing House, and the Railway Rates Tribunal is charged with the duty of reviewing its operation annually before the end of November and adjusting the level of the rebates in the light of the estimated rate relief for the twelve months ending the next September. The amount available for rebates varies from year to year by reason of fluctuations in the companies' payments for rates, while the incidence per ton of the traffic concerned obviously varies with the volume of the traffic passing. It will be extremely difficult, therefore, to make any definite allowance for this variable factor when, as the council envisages, endeavour is made to secure the correlation of road and rail freight rates. The council therefore expresses doubts as to whether the present system will remain the most suitable channel for passing on to trade and industry the benefits of railway de-rating. In the case of exported coal class traffic, continuance of the present scheme would present practically no difficulty as road haulage could not economically be used having regard to the conditions incidental to the coal shipment business. The position is different in the case of milk and livestock, however, for during the last ten years road hauliers have made serious inroads into former railway carryings and, incidentally have also forced the companies to make material reductions in charges for the purpose of retaining traffic to the railway. The rebates received by those agriculturalists who still forward milk and livestock by rail represent a considerable amount which, presumably, the industry could not afford to lose, particularly in present circumstances. It is not surprising, therefore, that the council should have been informed that the traders immediately affected did not ask for any change in the present practice. Whether this position

can be maintained when the council's recommendations have been implemented by legislation and the correlation of road and rail rates becomes a practical issue, must at the moment remain a matter for speculation.

* * * *

Recovering Lost Time

AT the discussion of the paper entitled "Acceleration of Train Services," read before the Institute of Transport and reported in our issue of December 16 last, the point was made that the margins between timetable demand and maximum locomotive output were much less in these days of high speed than they were in earlier years. From this it was argued that timekeeping was not now so easy on the principal express services, because the locomotive crews had less capacity for recovery of lost time occasioned by out-of-course delays, such as slacks for permanent way work. We are not quite sure, however, that the argument can be sustained. The columns of the monthly serial "British Locomotive Practice and Performance" in our associated publication, *The Railway Magazine*, give frequent examples of substantial time recovery, even on the streamline trains and others timed at high speed. The August instalment, for example, quotes occasions on which the L.N.E.R. Silver Jubilee recovered 8½ min. actual time from Huntingdon to Darlington; one section of the L.M.S.R. Royal Scot, with a 4-6-0 locomotive, recouped 11½ min. from Crewe to Euston, and came up from Crewe in 4 min. less than the time allowed the Coronation Scot, despite the latter's advantage of Pacific haulage and 42 tons less load; and the recovery of 21 min. from Doncaster to King's Cross, with a 16-coach train, described in the June 2 issue of *THE RAILWAY GAZETTE*, will be remembered. It would appear from these and many other similar runs that the technique of locomotive driving steadily improves, with the result that the constantly increasing severity of timetable demands is more than matched by increasing locomotive competence.

But there still appears to be no definite official policy in this matter of time recovery. The objection usually made to any suggestion of definite instructions on time recovery is that such instructions would interfere with a driver's discretion, and that this is unadvisable from the safety point of view. On the other hand, it is hardly open to dispute that safety of operation must be at its maximum when every train is running in its allotted path, and it is therefore desirable that late trains should be restored to their timetable paths at the earliest practicable moment. In other countries this view of the matter is regarded as axiomatic, so much so that in the United States drivers are expected to recover lost time, up to the full tractive capacity of their locomotives, and any engine crews showing persistent failure to attempt time recovery when necessary would probably be relieved of their jobs. In France the recovery of lost time is the subject of bonus awards, and self-recording speed indicators on all express locomotives afford ample safeguard against reckless running; a coal-saving bonus also discourages thrashing or other mismanagement of the locomotives in the making of attempts to regain time. In Great Britain, however, though there are such encouragements to lost time recovery as the *On Time* campaign of the L.M.S.R., with mention in a monthly publication of crews responsible for specially meritorious performances, this is as far as official policy is prepared to go. The driver who reasons within himself that if he regains lost time the schedule of his train will later be cut and time-keeping thereby rendered more difficult, and who therefore resists any temptation to recover the lost minutes, is in no way penalised or even discouraged from making such a decision.

There is, on the other hand, the frequently-quoted argument that "if anything should happen"—anything untoward, of course—while a driver is endeavouring to recover lost time, he may expect to be badly handled by the management in consequence. Such a view should be impossible. So far as concerns safety, provided all service slacks are duly observed, any speed of travel up to that of the fastest trains over any given route must, in the nature of things, be "safe" for that route. Unless anything reckless form a part of the attempt, therefore, it is difficult to see how the mere act of recovering lost time, within reasonable limits, can possibly entail risk. The argument revolves chiefly around what can be regarded as "reasonable limits." In this connection an interesting suggestion is made in the August instalment of "British Locomotive Practice and Performance," to which we have previously referred. It is that over each British main line minimum point-to-point times should be laid down between all timing points, for each class of locomotive normally used in express passenger service, graded according to load, i.e., varied times for trains up to 300 tons, 350 tons, 400 tons, 450 tons, and so on. In the event of an express running late, the driver should then be expected to recover at least the difference between his normal schedule and the minimum schedule, until (provided the lateness was not greater than the sum of these differences) the train had been restored to its proper path. The margin would, of course, be least with the fastest trains in the timetable, but there would be little excuse for any of the slower trains remaining behind time. This excellent plan would put time recovery on a statutory as well as a reasonable basis, and would bring to an end the more or less "go as you please" driving policy that obtains in this country today.

* * * *

Italian State Railways

FOR some time previous to the year ended June 30, 1936, the financial position of the Italian State Railways had been deteriorating, and that year itself closed with a deficit of 350,000,000 lire. An improvement then set in, so that for the year 1936-1937 there was a favourable balance of 178·4 millions to hand over to the Treasury, and in the following year one of 209·7 millions. However, in 1937-38 passenger traffic alone continued to grow; goods traffic began to show signs of falling off in April, 1938, and as this continued, the management decided to introduce higher passenger fares on January 1, 1939. The total length of lines worked amounted on June 30, 1938, to 16,968 km. (7,437 miles), of which 596 km. (370 miles) were narrow gauge. Further sections were electrified, bringing the length of electrically-worked routes to 3,960 km. (2,461 miles). One of the most important newly-electrified sections was that between Salerno and Reggio di Calabria, 420 km. (261 miles), work on which was carried out in 1936-1937 in a very short time despite numerous tunnels covering a length of 65 km. (40·4 miles). Some 1,155 km. of line (718 miles) were in course of electrification at the close of the year 1937-1938, of which about 808 km. (502 miles) were opened in November, 1938, so that half the scheme undertaken by the management, covering 9,000 km. (5,593 miles), was then complete. During the last three working years—figures for 1938-1939 are not yet available—123,000,000, 176,000,000, and 372,000,000 lire have been spent on electrification, and 206, 165, and 222 millions on other works. Among the most important were the new station at Trento and the extensive alterations and new terminus at Rome, undertaken in preparation for the 1942 international exhibition. In addition, station improvements

were carried out at Reggio, Messina, and Genoa, as well as considerable alterations to signalling installations at various places. By careful organisation the number of staff employed was reduced by 400 in 1936-1937 to 133,142, but over 5,300 new employees had to be engaged in the following year in the wages grades, chiefly on account of electrification and increasing passenger traffic. Wages of operating and workshop staffs increased in 1937-1938 by 162 millions to 1,748,000,000 lire. Higher rates of pay for Government servants came into force in October, 1936, and in July, 1937, railway workers enjoyed further increments.

As extension of electrification has resulted in a decrease in steam locomotive stock, the management has been able to dispense with older designs and retain the most efficient types. The older classes of goods wagon have also been eliminated. New designs of passenger coach were put into service, and also improved refrigerator vans. The new streamlined electric trains and the railcar services have proved very popular with the public. Some 900,000,000 lire were spent on new stock in 1937-38, against 323 millions in the previous year, covering 122 electric locomotives, 78 motor coaches, 235 railcars, 500 passenger coaches, and 2,514 goods wagons (including 200 refrigerator vans and other vehicles for perishable traffic). Improved methods have led to a great increase in the length of time between periodical locomotive overhauls, and the distance run is now about double what it was ten years ago. The following figures show the development of electric and railcar services since 1935:—

Class of train	Kilometres run		
	1935-36	1936-37	1937-38
Steam	99,306,000	87,167,000	89,317,000
Electric	43,258,000	52,112,000	60,325,000
Railcar	8,779,000	15,946,000	24,804,000

At first the traffic increased much more than the mileage run, but this situation changed when more frequent services were put on. About 220,000 tonnes of coal were saved in 1936-37 and again in the next year. A further fall in hot boxes and breakdowns to stock was recorded, with a reflection in better running generally. The management has been trying to develop frequent and rapid services on routes where they were likely to prove attractive. Over 10,500 route-km. (6,524 miles) are now served by railcars, and on 2,230 km. (1,386 miles) of secondary lines all passenger traffic is so conveyed. In a few cases railcar-vans deal with the goods also. The fast Turin—Milan non-stop railcar service has proved highly successful, and the *elettrotreni* have been equally popular on the Florence—Rome, Bologna—Naples, and Milan—Trieste—Gorizia, and other important lines, including also some branch routes. In our issue of June 30, 1939, we detailed the latest train service developments in Italy. Over 1,000 containers were in use in June, 1938, and a like number on order. The conveyor service, for taking goods wagons along the roads, met with a growing approval. The principal financial results for the past three working years are as follow:—

	1935-36	1936-37	1937-38
	(Millions of lire)		
Receipts from traffic or associated therewith ..	3,315·5	3,706·6	4,181·4
Operating costs ..	2,991·6	3,005·9	3,419·4
Operating surplus ..	323·9	700·7	762·0
Other costs ..	697·4	616·2	649·1
Other receipts ..	23·5	93·9	96·8
Balance ..	350·0	178·4	209·7
	(Made good by State)	(Paid to State)	

In both 1936-7 and 1937-8 goods receipts formed the larger proportion of the increase, but latterly passenger traffic has shown the better results. Expenses have been increased by the rise in wages, already mentioned, and the general rise in cost of materials. The quantity of coal

used fell from 53·7 to 50·8 kg. per 1,000 tonne-km. in three years, a material saving, and electrical energy consumed rose from 750,000,000 to 873,000,000 kW., the unit consumption also rising slightly from 29·4 to 29·5 watt-hr. per tonne-km. in twelve months. Fuel oil consumed by railcars rose from 2,656 to 6,404 tonnes, but

petrol decreased from 3,523 to 3,483 tonnes. Prices rose considerably. In many respects the 1937-8 year's working resembled that of the peak year, 1929-30, but there were signs that less satisfactory conditions were to be expected, as goods traffic was definitely declining once more. Higher passenger fares were helping to meet the difficulty.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

The Old Hereford and Abergavenny Tramroads

Eardisley, Hereford

July 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I am engaged at present in unearthing, and with some success, details of the old tramroads between Abergavenny and Hereford, which consisted of three undertakings. The first was the Llanfihangel Railway, from Abergavenny out to Llanfihangel, which obtained its Act in 1811. The second was the Grosmont Railway, from Llanfihangel to Monmouth Cap near Grosmont, which obtained its Act in 1812. The third was the Hereford Railway, running from Monmouth Cap right into Hereford and whose terminus was close by the famous Wye bridge; this did not obtain its Act until 1826. The reason for this was the tremendous opposition from the bargemasters, who at that time were bringing up all the Hereford coal, from the Forest of Dean. The scheme was proposed in March and April, 1811, and bitter fights went on against the tramway for 15 long years, and not till 1826 did the Act get through the House of Commons.



Stone sleepers $\frac{3}{4}$ -mile north east of St. Devereux station, G.W.R.

The construction of the lines up to Monmouth Cap was similar to the Hay Railway further north in the county. Stout stone blocks were used to carry the flanged cast-iron "plates"; the blocks were drilled $4\frac{1}{4}$ in. deep and $1\frac{1}{4}$ in. dia. (some varied slightly). The cast-iron plates were slotted at the ends, and slightly curved at each end also, to help them from being pushed out. In the blocks, stout oak plugs were driven into the holes, the plates were put in position, and then the tapering slot spikes were hammered down tight. Briefly this was the method used on these trams in 1811 and 1812. But in 1826 a new method was used by the

Engineer, Mr. Hodgkinson, who had already built the Hay Railway, the Llanfihangel Railway, and the Grosmont Railway and it is this new method which we have just found. My collaborator, Mr. E. H. Morris, and myself, whilst digging on the Hereford Railway, better known as the "Old Tram," suddenly found, that this section was quite different from the one I have just mentioned, and I invite your readers to assist us if possible.

I enclose a photo which gives a good idea of the curious stone sleepers used in 1826, and quite different from previous trams; these, you will notice, have no drilled holes at all, but evidently new ideas had come in and a transitional period had arrived, because we found, to our surprise, that ballast had been used, for the first time in this part of the country, consisting of fine sand and gravel from the banks of the River Wye. The plates were kept together, and apart, by what seem to be cast iron ties or sleepers, shaped at the ends into what look like spade-shaped chairs; the latter have ground themselves well down into the stone blocks and the photo shows fairly well what we have found. I suggest that these iron ties were ties and chairs combined and that the spade-shaped ends were turned up to hold the plates, and here iron keys were driven in. The plates which we have just discovered on the other sections had slotted ends for spikes; on this section the plates had no slots and no spikes were used. This is proved by the plate now in the Hereford Museum. Does anybody know of an iron sleeper similar to what I have mentioned—I cannot find one or hear of one? Other finds we have made are the axle of a tram; two cast-iron plates, one very worn by the grinding of the plate at acute curves by the cast-iron wheels of the trams; and another cast-iron plate most likely used for crossing roads of a double "U" shape, quite unique. All our finds will be put in the Hereford Museum together with the Hay finds which are there now.

Yours faithfully,
FRANCIS B. ELLISON, CAPT.,
Architect

An Unnecessary Stop?

Northampton, August 4

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—As a daily traveller by longer-distance "business" trains on one of the principal main lines running out of London, I am at a loss to understand why certain of them should be scheduled to stop at a station only one third of the distance from the London end, which is already well served by a frequent and semi-fast service of steam and electric local trains.

As a result of this, the down train in the evening is about twice the length, and presumably twice the weight of what would be necessary if this stop were cut out. From this point onwards the number of passengers is very considerably smaller, and less than half the number of coaches would amply suffice. Nevertheless, the superfluous vehicles have to be hauled to a destination over one hundred miles from London, which seems to me a most wasteful practice. The train is crowded to the first stop, and after that only about one-third of the seats are occupied.

The average number of passengers picked up at the intermediate station stop is very small indeed. May I ask if you can explain?

Yours faithfully,
L.M.S.

PUBLICATIONS RECEIVED

The Present Railroad Crisis. By William James Cunningham. (The Edward Eugene Loomis Foundation Lafayette College Lectures, 1939). Philadelphia: University of Pennsylvania Press. London: Humphrey Milford, Oxford University Press, Amen House, Warwick Square, E.C.4. 8½ in. × 5½ in. 84 pp. Price 4s. 6d. net.—One hundred years ago, says the author of this interesting summary, the problem in the United States was one of getting railroads; fifty years ago it was one of curbing railroads; now it is one of keeping the railroads alive. He describes the Transportation Act of 1920, the Emergency Transportation Act of 1933, and the Report of the Committee of Six, none of which provided a solution; and today, he says, the problem may be summarised in the statement that approximately one-third of railroad mileage is bankrupt, one-third hovering on the brink of bankruptcy, and only one-third is safely solvent. Grand scale consolidations have been mooted, but in this and other respects an excessive degree of corporate individualism stands in the way of radical reform. A National Transportation Board is indicated but might only duplicate the work of the Interstate Commerce Commission, and the Federal Co-ordinator appointed under the New Deal did not succeed in implementing his proposals. If the present business inactivity and uncertainty is indefinitely prolonged, Prof. Cunningham sees no escape from the ultimate expedient of government ownership of railways.

Urban and Suburban Railways: Studies of Transport Problems and Network Design. By Paul H. Bendtsen. Translated from the Danish by Micheli Jessen. Copenhagen: Danmarks Naturvidenskabelige Samfund. 1 Kommission Hos G. E. C. Gad. Vimmelskaftet 32. 9½ in. × 6½ in. 180 pp. + xxxix pp. Appendix. Paper covers. Price Kr. 8,00 net.—Although the introduction and extension of urban railways is an inevitable consequence of the growth of large cities, such railways, according to the author of this book, have often been laid out without due regard to traffic economy, and the subsequent development has consequently lacked any systematic plan. The system now operated by the London Passenger Transport Board, for example, is said to show the consequences of the absence of planning in the original routing of the component lines. Following up this idea, the author first describes in detail the existing urban railway systems (surface, overhead, and underground) of the principal cities of the world, with sketch plans of the more important of these, and statistics of the traffic density in each, and then proceeds to quote some examples of systematic traffic planning, with special regard to estimates of future expansion. Chapter VII contains a description of the

methods employed in the city of Copenhagen for determining traffic density in different districts, with estimated future development related to the increase in population, and the next chapter describes the theoretical determination of certain constants which may be employed in the planning of new urban railways. In the last chapter examples are given of the application of the methods described, and, although these examples refer specifically to the conditions existing in the city of Copenhagen, no doubt they may be used as a basis for planning urban railway systems in other centres. Altogether the book is a valuable and suggestive work in a small compass.

Rest-Pauses and Refreshments in Industry. London: Report No. 8 of the National Institute of Industrial Psychology, Aldwych House, W.C.2. 9½ in. × 7½ in. Price 2s.—This report is based on information received from 1,050 factories, employing about 305,000 workpeople, in seven areas of Great Britain, and comprising a wide variety of industries, but excluding mining, building, transport, and shipbuilding. The report states that 52.9 per cent. of the factories visited make provision for official rest-pauses, and in practically all instances the rest-pauses are spent in taking refreshment.

Van Spoorwegtarieven en hun Critici: Een Waarschuwing tot Deskundigen en Dilletanten: (Railway Rates and Fares and their Critics: A Warning to Experts and Amateurs) by S. A. Reitsma. 9½ in. × 6½ in. 21 pp. Reprinted from *Haagsch Maandblad*, June, 1939. A. W. Sijthoff, Leiden. Price not stated.—The author, editor of our contemporary *Spoor- en Tramwegen*, shows that complaints regarding railway charges are as old as railways themselves and briefly reviews some of the ideas put forward by Galt, Brandon, Perrot, Engel, Hertzka, and others, including the proposals made by Hastings in America quite recently, with the object of making travel cheaper and more popular. Mr. Reitsma pleads for sympathetic reception and examination of all proposals, a course insufficiently followed by many railway managements in the past, in fairness to their originators and to those who may benefit from any good they may contain. An amateur may be right and an expert wrong.

First Steps in Machine Drawing and Design (A Beginner's Manual). By L. A. Johnson. London: Pitt's Popular Publications—56, Talfourd Road, S.E.15. 7 in. × 4½ in. 80 pp. Illustrated. Paper covers. Price 1s. 6d. net.—This is one of a series of popular handbooks in which much useful information is compressed into a small space. Although, however, it is so handy in size, both text and drawings are clearly reproduced. Those who are now only at the beginning of their studies but aspire to become expert

draughtsmen, able later on to undertake intricate and responsible work at the drawing board, will find in this book a most helpful guide to the preliminary phases of their work. It treats in an elementary and easily understandable manner the simpler forms of draughtsmanship and the rules by which they are governed, and would appear fully to justify its description as "a beginner's manual."

Across Australia by Train.—Two booklets which we have received, one a new edition of a publication issued jointly by the various Australian railways, the other a publication brought out by the Commonwealth Railways, set out the revised schedules of the trans-Australian service from Perth to Sydney which were introduced when the journey time was cut last year to four days. The first-mentioned publication goes on to describe the chief cities and towns (giving changes of train) passed on the whole journey. The booklet of the Commonwealth Railways, on the other hand, describes in detail its own 1,000-mile standard-gauge line over the vast plain between Kalgoorlie, in Western Australia, and Port Pirie, in South Australia, towns formerly months apart but now linked by a luxurious train which runs three times a week and takes only thirty hours to do the journey.

Woodwork Machinery.—We have before us a copy of the latest catalogue issued by Thomas Robinson & Son Ltd., of Rochdale. It is full of interesting illustrations showing wood-working machinery designed and built by the firm, separately and in operation, and particulars relating to the machines are set out in some detail. The catalogue is divided into eleven sections covering different types of machinery used for a wide variety of operations. The range is comprehensive, but does not cover all the products of the firm, it being preferred to omit some rather than make the catalogue too bulky for convenient handling. A useful thumb index is provided, and the catalogue, which is printed in two colours, has attractively-designed covers.

Compressors and Pumps.—The B.A. Holland Engineering Co. Ltd., 18, Victoria Street, London, S.W.1, has issued a folder illustrating and describing various types of rotary compressors and vacuum pumps, and referring also in brief to the firm's range of low-pressure blowers, exhausters, and diesel engines. The special construction of the compressors and vacuum pumps allows a high speed of revolution without vibration or perceptible wear after long and continuous use. Their capacities vary from 3 cu. ft. up to 8,000 cu. ft. per min. Low-pressure blowers and exhausters are supplied with capacities from 250 cu. ft. to 12,000 cu. ft. per min. The S.L.M. diesel engines are designed for stationary, marine, or traction purposes, and in the last-named case can be installed either with S.L.M. oil-operated mechanical transmission or electrical power transmission.

THE SCRAP HEAP

"Will purchase 500 shares L.N.E.R. deferred at £3" (advertisement in financial paper).

Three pounds each or three pounds the lot?

A worker in Germany who habitually absented himself from work without leave and drank heavily has been sentenced to a month's imprisonment as "a damager of the German economy."

Latest air cargo carried by the L.M.S.R. was the Regimental Colour of the 1st Battalion The Royal Inniskilling Fusiliers. The Colour was flown from India to Croydon where it was taken over by Railway Air Services, which, in turn, took it to Belfast, where it was sailed to the regiment's Northern Ireland depot. Speedy delivery was essential because the Regimental Colour was wanted for the regiment's 250th anniversary, which was celebrated by the holding of a special service in Enniskillen Cathedral.—*From "Quota News."*

"AN INFINITESIMAL LEARNING . . ."
Under the caption "Hold-up" there appeared in an authoritative evening journal a querulous paragraph concerning delays encountered by the author during his journey by boat and train to Southampton on Saturday, August 5. We can make allowances for this writer's misapprehension as to the crowded state of the Southern Railway's main line on summer Saturdays in general and this Saturday in particular, but to expect us leniently to acquiesce in the implication of his concluding dictum, "surely the railway company could arrange their holiday timetable a little ahead of events," is asking rather too much. We fear, indeed, that if we were to "hold up" such an arbitrary view to the mirror of logic and common sense, the reflection therefrom would be far from flattering. . . .

It is over two years ago that the first Soviet woman engine driver, Z. P. Troitskaya, was appointed. Since then more and more women have been employed in responsible work on the railways of the Soviet Union. Last year Nina Uchava was appointed engine driver at the Jamboul depot of Turk-sib (the Turkestan—Siberian Railway). She trained a friend of hers to be assistant driver and the

two became the first women's engine crew on the railway. Chimkent depot on this line goes one better, however, for one of the eleven women assistant drivers stationed there works on the same engine as her husband—he drives and she is assistant. The signal levers on the Turkestan—Siberian now respond to the feminine touch; thirty in every hundred signalmen on the Chimkent section are "signalwomen" if we may use such a contradiction in terms. The despatcher of the section and the staff manager of the eighth engine department are also women.

British R. R. Sage Talks to Solons

Sherrington tells House group why merger was easier in Britain than in U.S.

Heading in the "Railway Age" to a report of an address by Mr. C. E. R. Sherrington to a judiciary sub-committee of the U.S. Senate. referred to on page 193

An unusual presentation took place recently when Mr. William H. Hamlyn, F.R.I.B.A., the architect to the holiday camp at Prestatyn (North Wales), opened last June, was the recipient of a late 16th century Brittany cupboard and six Old Windsor armchairs, subscribed to by the workmen, tradesmen, and staff of the L.M.S.R. and of British Holiday Estates Limited engaged on the construction and furnishing of the camp. Mr. Hamlyn, the official architect of the L.M.S.R., is an enthusiastic collector of antique furniture.

The *Daily Mail* recently set its readers an examination on points of interest to be seen from the train when travelling out of London over the G.W.R. to the West of England, the L.M.S.R. to Holyhead or Carlisle, and the L.N.E.R. to Edinburgh. Answers were given in another column on the

same page, and we think that *Daily Mail* readers would have been as much assisted in their replies by studying the various railway route books as the "examiner" evidently was.

The Oxford University Railway Club has just awarded a medal for gallantry to Mr. Christopher Sykes for his exploit, thrice repeated, of lying down in a trough between the metals and being "run over" by the Irish Mail. Mr. Sykes, in whom some see a great resemblance to Count Grandi, carried out this deed of derring-do, which is said to be dangerous to the ears, near Vaynol, in Anglesey. He has succeeded each time in emerging from his adventure with ear-drums intact.—*From the "Evening Standard."*

WORLD'S STEEPEST RAILWAY

The cable-operated incline railway at Katoomba, New South Wales, which for 1,300 ft. descends the steep sides of the Jamieson Valley beneath this famous holiday town, is claimed to be the steepest in the world. This railway was built in 1882 by Mr. J. B. North for the transport of coal mined in the valley. It was used exclusively for the haulage of coal skips until tourists found it an easy means of avoiding the severe climb up the mountain side. The railway now has a special open truck for the use of visitors, with seats set to remain level on steep grades. A dial on the electric haulage apparatus indicates the position of this vehicle during transit.

During rush hours on the Rio suburban section of the Leopoldina Railway, all available space on the trains is taken by storm. Engine tenders loaded with passengers, bunches of passengers astride coach couplings, not to speak of the wild scrambles through carriage windows at intermediate stations, are common sights. The poster we reproduce has therefore been affixed to all trains and station entrances, to educate passengers in the way of boarding and alighting from the trains with the least possible confusion, and it has obtained some measure of success. Translated, it requests passengers to board the train by the back door and alight by the front.



OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

NEW ZEALAND

New "Kb" Streamlined, Booster-fitted, 4-8-4 Locomotives

The first of the six new "Kb" type locomotives which are under construction at the Hillside (Dunedin) railway workshops, is undergoing its trials; the "Kb" is a streamlined "K" class fitted with a booster. These powerful engines are designed for heavy freight or passenger work, and will be used principally on the South Island Midland route between Christchurch and Otago, on which some particularly difficult grades are encountered. For some time past, the Railways Department has been carrying out a comprehensive programme of work on this line, an important feature being the strengthening of the bridges which hitherto were not strong enough to carry an engine of the weight of the "Kb" class.

In addition to streamlining, a further departure in the construction of the "Kb's" is the complete fitting, even to the coupled wheels, of roller bearings. The tractive effort of the "K" class engine is 30,815 lb., but the extra tractive effort afforded by the booster of the "Kb" is 6,470 lb., or an increase of 21.6 per cent. This will enable a maximum load of about 560 tons to be hauled over the grades referred to, against the 280 tons at present being hauled by the general utility "Ab" 4-6-2 type engine. Thus it will be possible to run one train where at present two are operating.

The Original 2-4-2 "K" Class

The original "K's" were of the 2-4-2 or Columbia type and were the first to be constructed for express train work in New Zealand. They were built by the Rogers Company of America, and weighed 42 tons in working order, against the 140 tons of the 4-8-4 "Kb." The original "K's" were brought into service on the opening of the through line from Christchurch to Dunedin, and it is a coincidence that their tractive effort was approximately the same as that which will be developed by the booster alone in the new "Kb" engine.

Station Remodelling

Remodelling of stations is an important feature of the present programme of railway development. The Cabinet has just approved of the acquisition of land at Hamilton, adjacent to Frankton junction—the principal main trunk junction in the North Island—as the first step in an important improvement scheme, which is expected to cost about £600,000. The scheme embodies the building of new stations at Frankton and at Claudelands, lowering the line

through Hamilton and the erection of a new low-level bridge across the Waikato River; the present railway bridge is to be converted into a road bridge.

Remodelling of Christchurch Station

The contract has been let for the new £50,000 goods shed at Christchurch, which has to be completed to enable the existing shed to be demolished. This demolition is necessary before the yard can be remodelled or temporary arrangements made while the platforms are rebuilt. At present the construction of the new carriage and wagon sheds at the corner of Falsgrove and Mowbray Streets is nearing completion, and a certain amount of track rearrangement also.

CANADA

Royal Tour Induces Holidays in Rockies

Inquiries reaching passenger and ticket offices throughout the Dominion show that Canadians are now anxious to see the scenes that impressed the King and Queen most. Apart from Ottawa, Banff was where they made their longest stop, and came in for a major share of the publicity; consequently it is the place thought of by the majority of Canadians and Americans who are planning a holiday in new surroundings. For their convenience, the Canadian Pacific Railway has planned special all-in tours of two, three, four, or six days, the cost covering railway fares, hotel accommodation and meals at Banff Springs Hotel, Chateau Lake Louise, and the Canadian Pacific chalets, and bungalow camps in the Rockies, as well as the scores of miles of mountain motoring through the beautiful Banff and Yoho National Parks.

C.N.R. Excursion to Hudson Bay

In August the Canadian National Railways offer an unusual opportunity to visit by excursion train an area rich in history and romance, and interesting in its present and its future—the Hudson Bay region. The seventh annual all-in bargain tour to Churchill on Hudson Bay will leave Winnipeg, Manitoba, on August 11 on a round trip of 2,200 miles. Places to be visited include: Riding Mountain National Park, with its miles of good roads through virgin forest, its golf course, bathing beaches, and beautiful scenery; Flin Flon, site of one of the most modern mining plants on the American continent; Manitow Rapids; and the turbulent and mighty Nelson River. The port of Churchill is reached on August 14: there, Eskimos from the north and Indians of the Cree and Chip-

pewyan tribes gather during the summer. After a stay of 30 hr. at Churchill, the special train will return via the Kettle Rapids and the Pas, to Winnipeg on August 17, completing a memorable trip of six days to one of the most interesting development areas in America.

SOUTH AFRICA

Vaal River Bridge to be Replaced

The Vaal River bridge at Fourteen Streams, on the main line north of Kimberley, has an interesting history. Built in 1892, it was blown up during the South African war, and has been strengthened from time to time to meet increasing loads. Now, however, it has to be replaced, and the new steelwork, weighing 1,530 tons, has been ordered.

The new structure will consist of ten 135-ft. through spans built on a diversion on the downstream side of the present bridge. There will be a headway of 5 ft. above highest known flood level, and one of the abutments will be 45 ft. high, probably the highest in the Union; this abutment and the piers and the other abutment will be founded on rock.

The over-end longitudinal method of girder launchings will be used, three or more spans being bolted together end-on, and the leading span hauled out as a cantilever counterbalanced by the second span. The spans have to be specially strengthened to meet the alternating stresses so set up. This method of launching limits the girder design to the square-ended type of girder. Arrangements are in hand for constructing the sub-structure in anticipation of the steelwork delivery; the existing spans will be transferred to the Transkei, where a new bridge is to be built over the Kei River.

Annual Report of Railways & Harbours Board

The recently-issued annual report of the Railways & Harbours Board for the calendar year 1938, states that the sound position of the administration's finances, mentioned in previous reports, could, unfortunately, not be maintained during the year. The revenue from transport services totalled £38,236,084 and expenditure totalled £34,904,992. In addition, special appropriations accounted for £5,204,332. After deducting the surplus of £1,093,048 brought forward from 1937, there was a net deficit of £780,192.

Passenger traffic attained a new record; the number of journeys was 111,900,972, an increase of 9,144,945 or 8.90 per cent., compared with 1937. Goods and mineral traffic (other than coal) totalled 19,076,540 tons with a revenue of £20,182,660—a decrease of 869,040 tons and £1,156,510 respectively.

Rolling stock valued at £4,852,689 was put into service during the year, and £7,439,098 represented the value of stock authorised, on order, under

erection, or contemplated as at December 31. Of this amount £3,439,514 is to be spent on rolling stock to be obtained from overseas for most of which the orders have already been placed.

Road Services

At the end of the year 15,100 miles of road motor services were being operated compared with 13,174 the previous year. New services and extensions totalled 2,147 miles, and the revision of existing services and the withdrawal of unremunerative services resulted in a decrease of 221 miles. The number of passengers increased from 4,796,855 to 5,299,406; goods tons decreased from 593,822 to 566,760, and cream increased from 1,305,265 to 1,599,917 gallons. The revenue was £634,257 compared with £611,611 in 1937 and expenditure increased from £580,703 to £655,930.

Air Services

The expansion of the regular air services in the Union is reflected in the operating statistics for the past two years. In 1938 7,147 flights involving a mileage of 1,862,195 were undertaken compared with 3,528 flights and 1,110,076 miles in 1937. Passenger traffic increased from 18,498 to 34,162; freight from 74,484 to 112,108 lb.; luggage from 705,458 to 1,253,356 lb. and mail matter from 1,514,967 to 2,893,531 lb. Earnings totalled £218,313, an increase of £84,867 while expenditure (inclusive of interest and depreciation) amounted to £519,681 an increase of £289,462. The net deficit for the year was £320,128 compared with £96,780 in 1937.

Two New Large Planes

Two new large Junkers "JU 90," shortly to be delivered to the South African Airways, will be the biggest landplanes ever to have crossed the equator into the Southern Hemisphere. In Germany this type of aircraft is known as the "flying hotel" and has accommodation for 40 passengers seated in five roomy compartments. For South Africa, however, 28 passengers only will be accommodated, thus giving additional travelling comfort. There will be two general passenger compartments, one, a smoking room, seating 16 passengers and the other for non-smokers seating 12 passengers. The seats are adjustable and of the same design as those on the Imperial Airways flying boats. Insulation between the outer and inner cabin walls—the latter being supported on rubber cushions—renders the cabins soundproof. Their maximum speed will be 235 m.p.h. and the cruising speed 215 m.p.h. with a pay-load of 13,200 lb. With normal full load the landing speed is under 60 m.p.h.

The simultaneous use of double-wing flaps and a split flap for landing is a novelty of the new craft. Trial flights have proved that with only three engines running there is still a good power reserve for climbing and with

two engines stopped—even if on the same side—the plane will not lose height. They are fitted with automatic pilots and with protection against the formation of ice on the propeller blades, on the wings, and on the panes of the pilot's cockpit.

Public Works National Planning

Acting on the recommendation of the International Labour Conference at Geneva in 1937, the Union Government has established a national co-ordinating body (public works) to assist the Government in carrying out the policy of timing and advance planning of public works as a measure to combat unemployment.

The co-ordinating body consists of the Secretaries for Finance, Public Works and Labour, the Postmaster-General, the Director of Irrigation, and the Controller of Disbursements and Financial Adviser to the South African Railways and Harbours.

At its inaugural meeting the body decided to approach the larger municipalities to obtain their co-operation by adopting a similar policy in regard to works undertaken by them. The "timing" involves an increase in the volume of public works during periods of depression and renders it desirable to provide for the preparation in advance, during periods of prosperity, of works capable of being held in reserve or exceeding ordinary requirements, which should be ready for execution as soon as the need is felt.

NEW SOUTH WALES

Replacement of Hawkesbury River Bridge

The famous Hawkesbury River bridge, which has been under detailed survey, has finally been condemned, and is to be replaced by a new bridge. Mr. Hartigan, Commissioner of Railways, recently announced that the new structure was estimated to cost £1,500,000, and that preliminary work was nearing completion. As soon as final details of the design had been settled and funds had been allotted, work would begin. The existing bridge was opened on May 1, 1889.

CHINA

Kowloon-Canton Railway, British Section

Despite the stoppage of through traffic from Kowloon (Hong Kong) to Canton and Hankow after October 12, caused by the Japanese invasion of South China, this railway experienced a record year in 1938. The operating ratio prior to this set-back was 49 per cent. and the unparalleled volume of traffic put a heavy strain upon the resources of the British section, calling for the utmost effort from all members of the staff.

Goods traffic had increased considerably as a result of the completion of the five-mile connecting link between

the Canton-Kowloon and Canton-Hankow Railways near Canton, in August, 1937, and large quantities of munitions had been sent through to the Chinese forces by this route since the outbreak of hostilities in other parts of China.

INDIA

Railways and Trade

Sir Guthrie Russell, Chief Commissioner of Railways, and Mr. T. S. Sankara Iyer, Financial Commissioner, met the committee of the Bombay Indian Merchants' Chamber on July 19 for a discussion of the outstanding railway problems in relation to trade. The subjects discussed included the general question of railway rates as affecting trade and industry, railway freights on cotton and coal, siding rules, and the proposed Bombay-Sind Railway.

Railway Workers

During his recent visit to Bombay, Sir Guthrie Russell was presented with an address by the National Union of Railwaymen. In reply, he assured the union that the Government of India had always in view the interests of the railway workers. He disagreed, however, with the view expressed by the union that the financial position of the railways was better. Returns received in recent weeks, he pointed out, were rather depressing. The international situation generally was very disquieting, but he hoped that things would settle down and enable the removal of some of the grievances mentioned in the address.

CEYLON

Supplementary Vote Passed

In requesting the State Council to vote an additional Rs. 2,115,000 necessitated by loss of revenue, due to the malaria epidemic and floods, the Minister of Communications and Works pointed out that, although the railway was working at an annual loss of six or seven millions, the Government was obtaining about eight millions from the additional petrol used by the buses and lorries that were now mainly responsible for the railway losses. The bus owners were undercutting the railway fares by 50 per cent., and were just eking out an existence, many working at a loss and going out of business from time to time, only to be replaced by others. Since the railway fares had been reduced, the railway had carried about 1,000,000 more passengers, a record for the last 10 years. This improvement would also have continued this year but for the unforeseen set-backs mentioned above. Unless the Motor Ordinance was so worked as to compel bus owners to run their services at economic rates, the Colony must be prepared to face railway deficits.

The supplementary vote was duly passed.

BRITISH RAILWAY STATISTICS

"The Railway Gazette" monthly table for March, 1939, as compared with March, 1938, compiled from the Ministry of Transport Statement No. 232

Description	Great Britain*	G.W.R.	L.N.E.R.	L.M.S.R.	S.R.
PASSENGER TRAIN TRAFFIC—					
Number of pass. journeys (ex. season ticket holders)	98,336,233	6,496,766	12,924,133	21,415,594	17,377,456
Increase (+) or decrease (—)	— 2,232,966	— 76,100	— 653,852	— 805,244	— 368,614
Passenger receipts (excluding season ticket holders)	£3,566,072	£449,339	£688,105	£1,071,841	£786,842
Increase (+) or decrease (—)	— £14,704	+ £10,469	— £13,668	— £6,221	— £1,494
Season ticket receipts	£832,497	£46,296	£136,298	£199,018	£301,587
Increase (+) or decrease (—)	— £28,834	— £2,751	— £3,890	— £10,315	— £5,586
Parcels and misc. traffic receipts (excluding parcels post)	£1,091,327	£205,054	£334,635	£404,796	£129,003
Increase (+) or decrease (—)	— £35,163	— £4,515	— £12,414	— £15,783	+ £1,946
FREIGHT TRAIN TRAFFIC—					
Freight traffic (tons) (excluding free-hauled)	22,147,782	5,337,361	10,038,621	10,512,201	1,304,554
Increase (+) or decrease (—)	— 1,423,576	— 421,827	— 600,558	— 575,653	— 53,490
Net ton-miles (excluding free-hauled)	1,327,837,038	252,977,317	439,608,220	542,996,111	54,243,330
Increase (+) or decrease (—)	— 63,531,804	— 12,190,319	— 29,626,408	— 19,585,876	— 4,102,887
Average length of haul (miles) (excluding free-hauled)	59.95	47.40	43.79	51.65	41.58
Increase (+) or decrease (—)	+ 0.92	+ 1.36	— 0.31	+ 0.91	— 1.38
Freight traffic receipts	£7,370,803	£1,267,000	£2,413,623	£3,056,000	£396,913
Increase (+) or decrease (—)	— £296,297	— £58,000	— £92,645	— £136,000	— £6,264
Receipts per ton-mile	1.332d.	1.20d.	1.32d.	1.35d.	1.76d.
Increase (+) or decrease (—)	+ 0.009d.	—	+ 0.04d.	— 0.01d.	+ 0.10d.
Freight train-loads : Average train-load (tons)	132.01	139.13	135.78	129.69	105.03
Increase (+) or decrease (—)	— 0.78	— 0.05	— 1.48	— 0.73	— 5.58
Net ton-miles—					
Per train engine-hour	1,023.02	1,080.61	1,067.01	984.40	814.61
Increase (+) or decrease (—)	+ 31.92	+ 26.05	+ 7.54	+ 48.51	— 29.21
Per shunting-hour	936.76	846.82	1,039.03	964.76	582.61
Per total engine-hour	489.00	474.77	526.42	487.24	339.67
Net ton-miles per route-mile per working day	2,936	2,979	3,082	3,474	1,163
Increase (+) or decrease (—)	— 146	— 144	— 206	— 141	— 93
Wagon-miles. Total	372,874,678	68,913,192	130,073,854	155,706,202	17,856,513
Increase (+) or decrease (—)	— 11,458,776	— 2,445,075	— 4,946,203	— 3,663,429	— 385,353
Percentage of loaded to total	66.88	68.40	64.73	68.08	66.34
Wagon per train. Total	34.93	35.02	35.42	34.87	32.41
Increase (+) or decrease (—)	+ 0.52	+ 0.37	+ 0.63	+ 0.56	+ 0.11
Loaded	23.36	23.95	22.93	23.74	21.50
Empty	11.57	11.07	12.49	11.13	10.91
Train-miles. Coaching—Per train-hour	15.25	14.09	14.23	14.36	18.53
Per engine-hour	12.38	11.26	11.05	11.16	15.91
Train-miles. Freight—Per train-hour	9.14	9.40	9.21	8.96	9.47
Per engine-hour	3.70	3.44	3.93	3.77	3.19
Engine miles. Total	46,556,465	7,491,414	12,746,717	17,042,765	6,544,314
Increase (+) or decrease (—)	— 1,041,470	— 235,738	— 541,209	— 479,061	+ 199,147
Mileage run by engines. Total train-miles—					
Coaching	23,240,088	3,134,583	5,216,423	7,322,107	4,889,916
Freight	10,674,795	1,676,800	3,671,879	4,464,888	551,004
Engine-hours in traffic. Total	4,961,168	877,201	1,479,727	1,918,915	498,652
Increase (+) or decrease (—)	— 232,510	— 37,204	— 77,969	— 115,467	— 2,109
Shunting miles per 100 train-miles—					
Coaching	7.34	6.99	6.77	7.66	8.28
Freight	70.47	81.78	64.25	66.53	94.21

Passenger Traffic Statistics: Number of journeys, receipts, and receipts per journey (excluding season ticket holders)—March, 1939

Subject	Great Britain	G.W.R.	L.N.E.R.	L.M.S.R.	S.R.	Cheshire Lines	Liverpool Overhead	L.P.T.B.†	Mersey
Full fares—									
Pass. journeys	31,778,309	550,825	806,527	1,162,898	2,455,431	11,738	159,085	25,831,746	82,677
Gross receipts	£804,588	£64,451	£99,609	£107,304	£170,964	£2,128	£1,706	£344,263	£1,435
Receipts per pass.	6.08d.	28.08d.	29.64d.	22.15d.	16.71d.	43.51d.	2.57d.	3.20d.	4.17d.
Reduced fares—									
Excursion and week-end—									
Pass. journeys	33,306,898	3,416,688	7,410,215	11,167,730	7,816,892	369,858	72,994	1,490,214	650,785
Gross receipts	£1,917,774	£289,616	£423,028	£688,523	£427,253	£19,658	£714	£31,708	£9,971
Receipts per pass. journey	13.82d.	20.34d.	13.70d.	14.80d.	13.12d.	12.76d.	2.35d.	5.11d.	3.68d.
Workmen—									
Pass. journeys	29,781,297	2,092,640	3,974,008	8,067,841	6,363,560	286,484	247,364	7,502,840	301,878
Gross receipts	£448,591	£32,164	£67,296	£134,797	£107,364	£4,957	£2,142	£85,485	£2,701
Receipts per pass. journey	3.62d.	3.69d.	4.06d.	4.01d.	4.05d.	4.15d.	2.08d.	2.73d.	2.15d.
Other—									
Pass. journeys	3,461,304	434,689	731,394	1,013,655	740,577	27,568	54,101	392,135	8,789
Gross receipts	£383,082	£60,582	£95,430	£135,504	£80,250	£3,701	£368	£3,618	£181
Receipts per pass. journey	26.56d.	33.45d.	31.31d.	32.08d.	26.01d.	32.22d.	1.63d.	2.21d.	4.94d.
Total—									
Pass. journeys	98,336,233	6,496,766	12,924,133	21,415,594	17,377,456	695,690	533,544	35,216,935	1,044,129
Gross receipts	£3,566,072	£449,339	£688,105	£1,071,841	£786,842	£30,487	£4,930	£465,074	£14,288
Receipts per pass.	8.70d.	16.60d.	12.78d.	12.01d.	10.87d.	10.52d.	2.22d.	3.17d.	3.28d.

* All standard gauge railways

† Includes passengers originating on the railway undertakings, and on the Whitechapel and Bow Joint Railway

LOCOMOTIVE BRAKE BLOCK PRESSURES

Characteristics of different contours, and the calculation of power when using the parallel type of block

By G. W. McArd

ALTHOUGH the destruction of the kinetic energy stored in a moving train has been effected for over a century by the application of brake blocks to the wheel treads, comparatively little data have been published concerning this detail. References to numerous locomotive arrangement drawings suggest that in several respects the actual design of the block, as used for locomotives, has not been fully appreciated, nor has the correct method been followed in its suspension. Both features call for careful observation, and in deciding on the method of suspension, attention must be paid to the vehicle as a unit rather than localised to the brake system as such. So far as carriage stock is concerned, the block generally employed, comprising a cast steel head and renewable cast iron shoe fastened with a steel wedge or cotter, does not come within the purview of this article.

Two types of block are in general use and can be

effect on the tyre itself, causing cracking of the tyre flange. As the number of blocks of each type in daily operation is very considerable, the real factor in deciding

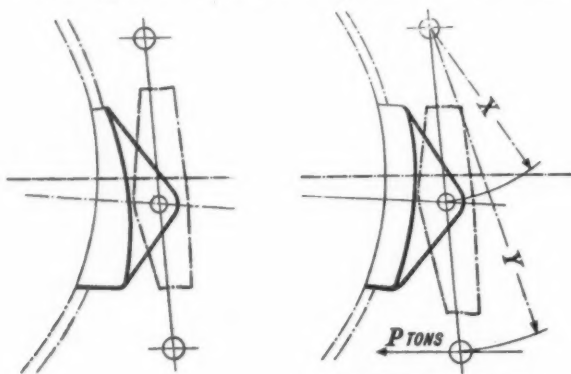


Fig. 1

BRAKE PRESSURE ON WHEEL

$$P_1 = P \left(\frac{Y}{X} \right) \text{ TONS}$$

Fig. 2

designated as (1) wedge shape, and (2) parallel. These are shown in Figs. 1 and 2 respectively, and whereas the former is frequently met with on main line locomotive stock, the latter is adopted almost entirely for shunting engines and those employed in steel works, collieries, and similar sites. There would appear to be no serious objections to the use of each type for either service, but where weight limitations exist the first will give an appreciable saving and yet offer the same braking surface; however, it naturally does not possess the same life as the second. This undoubtedly explains the preference for the second for locomotives where a large amount of braking occurs.

A further factor that calls for consideration is the contour in section. Fig. 3 shows a type preferred by many engineers; others will accept only that shown by Fig. 4. The block which embraces the tyre flange is favoured on account of the greater surface presented for wear as well as the fact that its grinding action on the tyre, even allowing for the difference in hardness of the two materials, prevents an excessive depth of tyre flange from forming as will occur where the block bears only on the flat tread. On the other hand, supporters of the latter type contend that the flange type of block has a destructive

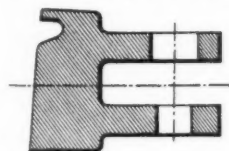


Fig. 3

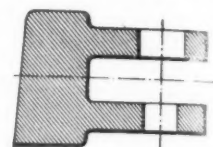
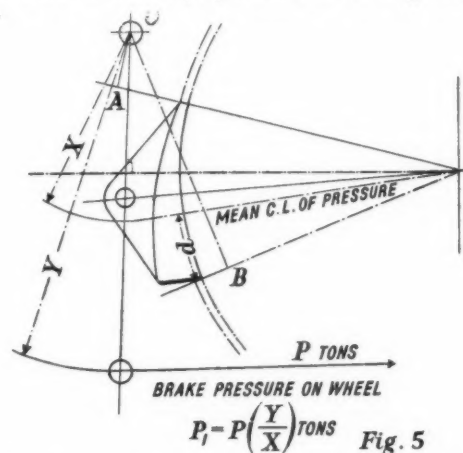


Fig. 4

which type to employ is probably largely a personal one, after considerations of weight restriction and the life of the block have been taken into account.

The calculations for brake power when using the parallel type are simple and are shown in Fig. 2. For the wedge shape block, however, it is necessary first to determine the theoretical centre at which pressure is applied. The following method, based on the assumption that the wear at any point of the block profile will be directly proportional to the pressure applied at that point, is recommended. For a definite angular movement of the brake hanger in Fig. 5, the virtual arms AO and BO have a like angular rotation, but naturally the movement of points A and B will be proportional to the lengths of their



$$P_1 = P \left(\frac{Y}{X} \right) \text{ TONS}$$

Fig. 5

respective arms. Assuming these movements to be equal in measure to a and b respectively and the length of the wearing surface of the brake block to be equal to H , we then obtain a trapezium as shown by Fig. 6, which gives the wear at any point on the block. From actual experience the foregoing assumption has been found to be perfectly sound, and the determination of the centre of wear (and pressure) will, therefore, enable us to find the effective arm at which the brake block will operate. This centre will fall on the C.G. of the trapezium and is obtained from the formula $d = \frac{h(2a+b)}{3(a+b)}$, where d is the distance measured up from the base of the figure. Applying this to Fig. 5 locates the required arm, and by

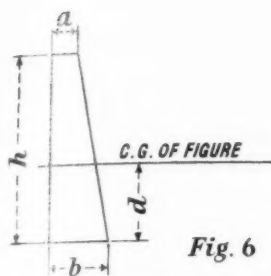


Fig. 6

slight arithmetical calculation the theoretical point of leverage on the hanger itself is obtainable.

The suspension of the hanger does not always appear to be the most suitable that may be chosen for the purpose, and it is here suggested that the true centre line of the hanger when the block is in the half-worn condition should fall on a line drawn perpendicularly to a radial line passing through the axle centre and the centre of attachment of the block to the hanger. If this method is followed, the inclination when the block is fully worn is the same in degree as for a new block, only to an opposite inclination; in the intermediate stages the hanger position varies from what may be regarded as a moderately good angle to the ideal (perpendicular) and thence again to a slope which approximates to that at the beginning.

Another point which calls for attention relates to the position of the block vertically on the wheel. In most cases this is situated slightly below the horizontal centre line of the axle, but where the wheels are of comparatively small

diameter and pitched close together—as frequently occurs on eight-coupled locomotives—the blocks may be assigned a very low position, so low, in fact, that they are mounted on the trunnioned ends of the crossbeams with the hangers functioning merely as links instead of, as usual, levers. In such a case the pressure on the wheel has a very considerable lifting component, and when this arrangement is found in a double-ended locomotive, particularly a tank engine of, say, the 4-8-4 class, very great care is required to ensure that on an emergency application the brakes will have the retarding effect desired. Where neither bogie is braked it is perfectly feasible for the brake blocks to be applied at so low a position on the wheels that the actual result of a heavy application is to ease the load from the rail at the driving wheels, and thus allow the engine—virtually unbraked—to overrun its distance, or, if in a terminal station, to foul the buffer stops. Such cases have actually occurred, and the only solution possible has been to brake the bogies in addition to the drivers.

For those mathematically inclined it is an interesting problem to determine the actual lifting effort of a brake system similar to that described, and from the result arrive at the increased load falling on the bogie bearing springs.

RAIL-WELDING IN SOUTH AFRICA

A description of the process adopted and of an ingenious method of carrying 120-ft. rails over the narrow gauge, sharp curves, and steep grades of South Africa

THERE are to be six flash-butt rail welding depots on the S.A.R., situated at Danskraal, Elandsfontein (near Germiston), De Aar, Bellville, Kingwilliams-town and Bloemfontein. Field welding is effected by either the Thermit or Boutet process. The Danskraal depot has already been constructed and the other depots will be modelled upon it. Originally opened as an experimental station in 1937, Danskraal is now a large welding depot.

The layout and equipment enable the various operations to be carried out in sequence, and handling is reduced to a minimum. Short rail lengths pass in at one side, and emerge at the other as 120-ft. rails, the standard length.

The first processes are rail sorting and cutting to exact lengths—to provide a total length of 120 ft. collectively, allowing about 1 in. for consumption in each weld—and de-rusting to insure good electrical contacts. The rail lengths are then gripped in the jaws of the welding machine with a force of 30 tons, and the jaws are connected to the secondary side of a welding transformer. The rail ends are heated by alternately making and breaking contact between them by reciprocating one of the jaws. When the correct temperature has been reached the ends are forced together under a pressure of 20 tons to effect the weld. The upset metal of welded joints is afterwards clipped off and the joint then smoothed off by grinding.

In future depots the cutting to 120-ft. lengths will be carried out after welding by a combined saw and drilling machine, which will make the cut and drill two fish-bolt holes in three minutes. Ovens have been designed and are now being tested to enable the structure of the steel to be restored to its original condition by normalising the joints after welding.

Transporting 120-ft. Rails

Despite the 3 ft. 6 in. gauge and sharp curvature, the 120 ft. rails are railed long distances, but are carried in full train loads. To insure safe carriage existing rolling

stock has been converted; a cradle resembling a bridge plate-girder is mounted on two 65-ft. trucks with pivots, thus forming what is in reality a very long bogie vehicle, such that the 120-ft. rails on it remain almost straight even on the sharpest curves.

At the depot the rails are slid sideways on to the trucks, but for unloading a moving ramp is attached to the rear truck of the train and the rails are anchored to the track, so that when the train is moved slowly forward the rails are drawn off endwise and gently deposited on the track. In the first long-distance test haul of 120 ft. rails on this system, 240 rails—sufficient for over 2½ miles of track—were carried 600 miles over the sharpest curves and steepest gradients without a hitch.

On the Natal main line 120-ft. rails are being welded *in situ* into a continuous length of one mile without intermediate fish joints. If 120-ft. rails were laid everywhere throughout the system, 80 per cent. of the existing rail joints would be eliminated.

NATIONALISATION OF THE SWEDISH RAILWAYS.—The nationalisation of the privately-owned Swedish railways, provided for in the Bill introduced into the Riksdag in March, will represent, according to the Report on Economic and Commercial Conditions in Sweden, issued by the Department of Overseas Trade (H.M. Stationery Office, 2s. net.) a State liability which is estimated at 330 million kroner, spread over five years. Part of the sum, about 180 million kroner, represents payment of the debts of the companies, which are for the most part in a strained financial position, due largely to road competition. During 1938 the length of the railways operated by the State increased from 7,679 to 8,031 km. (4,772 to 4,990 miles) whereas that of the private lines decreased from 9,095 to 8,849 km. (5,651 to 5,500 miles).

THE ROAD AND RAIL CONFERENCE

The twelve regional committees of this body, formed in the course of the "square deal" negotiations, are now in operation

FIVE days after the railways had launched their "square deal" campaign, there occurred what we recorded at the time as "a somewhat surprising development." On November 29, 1938, the British Road Federation issued a statement giving qualified support to the railway companies' claims for release from legislative restrictions, while insisting that the road interests themselves had even more cause to complain of burdens laid upon them by Parliament. Here was sympathy at least, and a hint of common cause between the parties which was later to be made more strikingly manifest. At the beginning of 1938 a liaison committee on road transport rates had been formed, consisting of representatives of "A" and "B" licence holders drawn from all the national road haulage organisations, its purpose being to evolve a road rates structure on the lines suggested in the Transport Advisory Council's Report on Service and Rates. The committee found itself confronted with a new situation when the railways propagated their claim for freedom from rates control, and it was at its own suggestion that a meeting was arranged with the railway representatives on February 6 of this year. After this meeting it was announced that a basis of agreement on rates policy had been reached between the two industries, and a joint memorandum drawn up for submission to the Transport Advisory Council. Apart from questions of principle, the most important feature of the memorandum was its record of the agreement reached between the road and rail industries to set up voluntarily a central consultative committee for arranging measures of co-ordination and dealing with any difficulties that might arise. This was the nucleus of the present Road and Rail Central Conference and its 12 regional committees, now in full operation as the last of the inaugural meetings of the committees was held in Nottingham on August 1.

The spirit of the memorandum was confirmed in an exchange of letters on February 16 between Lord Stamp, on behalf of the railway companies, and Mr. W. Edwards, Chairman of the Liaison Committee on Road Transport Rates. Lord Stamp's letter summarised the agreement reached in the following terms:—

Arising out of the joint memorandum to the Transport Advisory Council by the four main-line railway companies and the Liaison Committee on Road Transport Rates, it is agreed and understood between the two industries that, in order to achieve that co-ordination to which the joint memorandum is directed, neither the railway companies on the one hand nor the road haulage industry on the other will embark upon a policy of cut-throat competition calculated to defeat that co-ordination.

The memorandum stated the intention of the two parties to set up forthwith a central consultative committee with the immediate task of considering and formulating the principles on which voluntary agreements might be entered into regarding the fixing of rates for freight traffic. This committee was to have the right of setting up regional committees as it thought fit. On April 12 its inaugural meeting was held in London, under the chairmanship of Mr. A. E. Sewell, Goods Manager (Scottish Area), L.N.E.R. Mr. Roger Sewill, Director and Secretary, Associated Road Operators Limited, was appointed Chairman of the road members.

At the present time the Road and Rail Central Conference—as the central consultative committee is officially called—is holding monthly meetings, and has formed four sub-committees dealing with classification, conditions of

carriage, general purposes, and licensing. It has a regional committee in each of the twelve traffic commissioners' areas. These committees review the principal streams of traffic in their localities, and make recommendations to the central conference with a view to the establishment of rates agreements. The central conference itself is employed upon the complicated task of reviewing the commodities comprised in the present 66 classes of the railway freight classification, and evolving therefrom a new classification in the light of modern transport conditions. It is hoped to reduce the classes to six or eight, after which appropriate scales of charges will have to be worked out. Obviously implicit in a scheme of correlated road and rail rates is uniformity in conditions of carriage between the two agencies, and this is a further matter upon which the central committee is engaged.

In the joint road-rail memorandum to the Transport Advisory Council, it was emphasised that universal adherence to such voluntary agreements as might be reached could not be relied upon, and some form of statutory control was regarded as an essential preliminary to general transport co-ordination. In the meantime the work of the conference and its committees is a tangible sign of the desire of road and railway to achieve a new relationship between the two forms of transport in which—to quote the joint memorandum—"it will more than ever be the object, and the interest, of each to win traffic by the quality of the service which it renders."

Composition of Conference

The members of the Road and Rail Central Conference are as follow:—

Road Transport Representatives	Railway Representatives
Roger W. Sewill (Chairman)	A. E. Sewell (Chairman), L.N.E.R.
Arthur Andrews	J. C. Chambers, Southern Railway
Capt. C. Barrington	F. C. A. Coventry, G.W.R.
J. W. Beresford	D. C. K. McCulloch, L.M.S.R.
C. S. Dunbar	H. W. Payne, G.W.R.
Harold Elliott	W. M. Perts, Southern Railway
G. T. M. Fairclough	A. Forbes Smith, L.N.E.R.
N. D. Fawkner	W. Yeaman, L.M.S.R.
I. R. Grove	
C. Holdsworth	
J. S. Nicholl	
Major W. Taylor	
F. G. Bristow, C.B.E.	J. E. T. Stanbra (Joint Secretary)
(Joint Secretary)	

Regional Committees

The following are the members of the twelve regional committees:—

Road Transport Representatives	Railway Representatives
1. NORTHERN REGION	
H. Wilkinson (Chairman)	G. H. Bowes (Chairman), L.N.E.R.
E. Burton	A. S. Buswell, L.N.E.R.
A. D. Currie, M.C.	T. Dempster, L.M.S.R.
J. Downes	A. A. Harrison, L.N.E.R.
N. Mitchell	L. E. Marr, L.N.E.R.
Antony Todd	D. Murray, L.N.E.R.
Wm. W. Walton	G. Peacock, L.N.E.R.
H. Wilkinson	F. K. Rogers, L.M.S.R.
2. YORKSHIRE REGION	
L. W. Morton (Chairman)	G. H. Bowes (Chairman), L.N.E.R.
R. E. Britton	W. E. Blakey, L.N.E.R.
A. H. Butterwick	J. F. Bonaker, L.M.S.R.
Harry Clark	E. Davies, L.M.S.R.
H. Goodwin	D. M. Gracie, L.N.E.R.
J. T. Rodwell	B. X. Jessop, L.N.E.R.
H. J. Sharpley	C. Jones, L.M.S.R.
W. Smith	J. E. Papworth, L.M.S.R.
3. NORTH WESTERN REGION	
J. A. Wilson (Chairman)	H. G. Humphreys (Chairman), L.M.S.R.
C. H. Christenson	L. C. Brittlebank, L.M.S.R.

E. Knowles
T. Lawrenson
J. T. Mount
T. Pearson
Alfred Robinson
J. F. Supplies

4. WEST

E. G. Whitaker (Chairman)
R. Blunt
H. B. Clarke
A. G. Dale
H. W. Mousley
A. E. Silvester

5. EAST

W. Donaldson-Wright (Chairman)

T. Bates
A. W. Darby
F. O. Hodgkinson
J. A. Kirby
W. J. A. Peck
F. Platts
L. J. Rix

6. EAST

A. Porter (Chairman)
R. B. Brittain
F. Bullen
E. C. Crabtree
E. O. Hooks
S. T. Russell
G. J. Sell

7. SOUTH WALES REGION

J. Freeguard (Chairman)
L. G. Bevan
Fenton Rees
N. C. McPherson
O. G. Wynn

8. WESTERN REGION

G. Smart (Chairman)
F. G. Curtis
Howard Fish
E. F. Knill
John Lampard
A. Packham
A. F. Wills

9. SOUTH EASTERN REGION

D. Richardson (Chairman)
W. P. Arnold
F. J. Downer
Dennis Fairclough
J. B. Green

G. Cornish, G.W.R.
E. G. Garstang, L.M.S.R.
F. R. Hauxwell, L.M.S.R.
H. S. Owen, L.N.E.R.
W. N. Robinson, L.M.S.R.
F. B. Thornhill, L.M.S.R.

MIDLAND REGION

F. K. Pelley (Chairman), G.W.R.
F. A. Arnold, L.M.S.R.
D. Blee, G.W.R.
G. H. Nutter, L.M.S.R.
S. Roberts, L.M.S.R.
J. B. Scattergood, L.M.S.R.
E. J. Tripp, G.W.R.
J. A. Warren-King, G.W.R.

MIDLAND REGION

D. W. Harrison (Chairman), L.N.E.R.

H. J. Birkbeck, L.N.E.R.
J. F. Bonaker, L.M.S.R.
H. J. Hoskins, G.W.R.
D. S. Inman, L.M.S.R.
J. M. Kirkwood, L.M.S.R.
F. Leigh, L.N.E.R.
R. H. Watts, L.N.E.R.

EAST REGION

J. P. Allix (Chairman), L.N.E.R.
A. L. Castleman, L.M.S.R.
G. G. Goodings, L.N.E.R.
D. S. Inman, L.M.S.R.
H. R. Statham, L.N.E.R.
R. H. Watts, L.N.E.R.

F. H. Wilson
A. J. Wright

10. METROPOLITAN REGION

J. F. E. Pye (Chairman)
H. T. Dutfield
Frank F. Fowler
S. K. Kneller
I. McAlaster
J. Pollitzer
Capt. A. T. Robson
B. G. Turner

11. SCOTLAND, SOUTHERN REGION

T. Worsley (Chairman)
D. Hunter
J. D. Inglis
Alex Ramage
John H. Smart
David Wright

12. SCOTLAND, NORTHERN REGION

C. W. Adamson (Chairman)
A. Callender
John C. Fiddes
John J. Gordon
Wm. D. Munro
W. R. Wiseley

R. F. J. Surry, Southern Railway
W. H. Mepsted, Southern Railway
H. D. Poole, G.W.R.

A. L. Castleman (Chairman), L.M.S.R.
F. A. Arnold, L.M.S.R.
A. Bow, Southern Railway
H. J. Hoskins, G.W.R.
P. Syder, L.N.E.R.
E. J. Tripp, G.W.R.
R. G. Walker, Southern Railway
R. H. Watts, L.N.E.R.
C. S. McLeod (Chairman), L.N.E.R.
J. Brewster, L.M.S.R.
J. Gold, L.M.S.R.
G. Lochrie, L.M.S.R.
W. N. Kerr, L.N.E.R.
W. Strachan, L.N.E.R.
W. Urquhart, L.M.S.R.
A. Wright, L.N.E.R.

D. Shaw (Chairman), L.M.S.R.
J. Bissett, L.M.S.R.
R. A. Dustan, L.M.S.R.
R. M. Hunter, L.M.S.R.
C. H. Lott, L.N.E.R.
J. Moir, L.N.E.R.
J. Normand, L.N.E.R.
E. Sim, L.N.E.R.

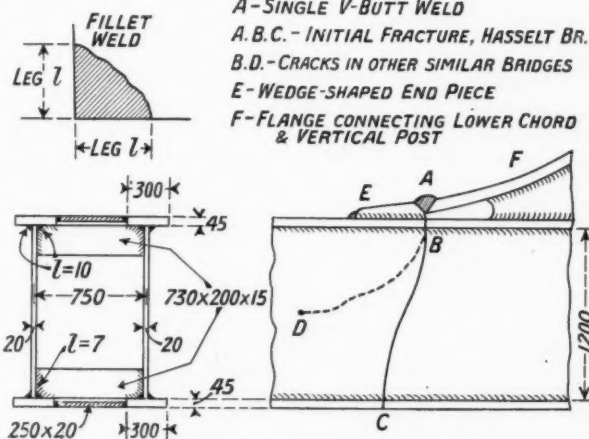
Each committee has a membership consisting of a maximum of 16 rail and road representatives. Meetings of the twelve regional committees are to be held monthly in Edinburgh, Aberdeen, Manchester, Newport, Cambridge, Bristol, Leeds, Newcastle-on-Tyne, Birmingham, Nottingham, London, and elsewhere. The Metropolitan and South-Eastern Regional Committees both meet in London. The openings of these meetings made history in the world of transport as in the majority of areas it was the first time that road and rail operators had sat round a common table to try and settle their differences, which have induced so much heat and feeling in the past. Nevertheless the meetings were conducted in a spirit of harmony and enthusiasm, and in the words of Mr. Roger Sewill, Joint Chairman of the Central Conference, on behalf of the road operators, at the inauguration of the last regional committee at Nottingham on August 1, "The two industries are now so friendly that they could never go back to the state of affairs that existed prior to their 'getting together.'"

HASSELT BRIDGE COLLAPSE

A REPORT on the collapse of the Hasselt bridge over the Albert Canal in Belgium, which occurred on March 14, 1938, was published in THE RAILWAY GAZETTE of May 20, 1938, based on personal observations. Since then numerous articles have appeared in periodicals all over the world. Discussion of the cause of the collapse is still proceeding and opinion remains acutely divided. Meantime there is no sign of the publication of the official report of the inquiry, as promised after the accident.

Additional information has come to light, particularly through a Belgian publication, *L'Ossature Métallique* (February, 1939), which appears to have some connection with tests carried out by the Belgian authorities. The failure in the lower chord, which it has been established was the direct cause of the accident, has been photographed after salvage from the bottom of the canal. Details of the joint and the position of the crack can be seen from the accompanying sketch.

There seems to be some confirmation of the conclusion of our article already referred to, that weaknesses in design, in quality of steel, and in welding procedure may well have been responsible for the collapse, probably in combination with additional factors.



Details of joint and position of crack in lower chord of bridge, ascertained after salvage

CURVE REDUCTION ON ROUTE OF SUPER CHIEF

By extensive realignment works, hundreds of speed restrictions have been eliminated on the 2,227-mile main line of the Santa Fe Railroad between Chicago and Los Angeles, covered in 39½ hours by the Super Chief diesel train

THE Atchison, Topeka & Santa Fe Railroad has recently carried out an extensive easement of curvature on its 2,227-mile main line from Chicago to Los Angeles, with the primary object of obviating speed restrictions; incidentally both curvature and length of line have been slightly reduced. Not the least important point about the scheme was that it embraced new standards of superelevation and transitions, standards which are also being applied to all the company's main lines carrying fast traffic, apart from alteration of curvature.

The line in question crosses five major and several minor mountain ranges, where gradients impose speed restrictions such that even 10-deg. ($8\frac{1}{2}$ -ch.) curves necessitate no greater speed reduction, and in the most difficult sections realignment is prohibitively costly. But there were many long lengths in open country, in the course of this line, ideal for high speeds except in their having 2-deg. and 3-deg. ($43\frac{1}{2}$ - to 29-ch.) curves.

The theory worked to was that permissible speed on a curve is dependent upon the superelevation, and the latter was, therefore, first fixed by compromise between high and low speeds anticipated, and ranged from $1\frac{1}{2}$ in. for a 30-min. (174-ch.) curve to 6 in. for 3-deg. (29-ch.) curves and sharper. Speed was then defined in terms of degree of curvature and superelevation, and, on the principle that any speed giving comfortable riding is lower than the safe and much lower than the overturning speed, smooth riding was found to permit of the use of speeds corresponding to a 3-in. unbalanced cant for curves of about 1 deg. (87 ch.) and over, and less unbalanced cant—roughly 30 m.p.h. above equilibrium speeds—for curves easier than 1 deg. Lengths of transitions were fixed on the principle that rate of change of superelevation must not exceed $1\frac{1}{4}$ in. a sec. For instance, the length of transition for a 2-deg. ($43\frac{1}{2}$ -ch.) curve with a $5\frac{1}{2}$ -in. superelevation that may be traversed at 80 m.p.h. is 530 ft.

The economical maximum rate of curvature was found to be 1 deg. 30 min. For though easier curvature would permit of higher speeds, it would increase the number of cases where a change would not be feasible and would enhance the cost. This was therefore fixed at the desired maximum, but even so, where cost of reducing curvature to this figure was prohibitive, the standard has had to be lowered.

Varying Conditions

The wide range of conditions on this route may be gathered from the fact that in the 202-mile section from La Junta to Dodge City with the minimum curvature and eastbound grades not exceeding 1 in 170, the scheduled average speed of the diesel-electric Super Chief (which covers the 2,227 mile journey in 39½ hr.) is 78.2 m.p.h., and there are 128 miles with no speed restriction whatever. On the other hand the 22.8-mile section from Raton to Trinidad has ruling grades of 1 in 30 eastbound and 1 in 28 westbound and the Super Chief schedules are 57 min. and 56 min. respectively or under 25 m.p.h. A very careful selection of the curves to be realigned was therefore necessary. The two principal considerations were the improvement in train performance resulting from each realignment and the cost of the latter. Justification for

easing isolated curves was obviously easier than for those forming a series. Generally speaking, it was considered that a reasonable expenditure was justified if the easement removed a speed restriction necessitating appreciable deceleration below that allowed beyond both ends of the curve in question.

Examples of Work Involved

In practice the easing of single curves was usually comparatively inexpensive, but the reduction of curvature over a series of curves involved much larger projects. One covering four miles of line necessitating 162,000 sq. yd. of excavation and 141,000 of fill in order to replace 11 curves varying from 3 deg. to 6 deg. (roughly 29-ch. to $14\frac{1}{2}$ ch. radius) with 3 curves only each of 1 deg. 30 min. (58-ch. rad.), and to reduce the total curvature by over 375 deg. and the length of line by 3,193 ft. The number of these major realignments was, however, small.

In the 26 months from January 1, 1935, onwards, 479 track-curves were eliminated or reduced, 228 by realignment of formation and 251 by slewing. Altogether the realignments eliminated 3,626 deg. of (central angle) curvature and saved all but $3\frac{1}{4}$ miles of track length.

Where curvature has not been reduced, longer transitions and revised cant have been introduced to improve running.

The earthwork required for realignment was done by contract, but all permanent way work was done by the company's staff. Curve reduction was carried out mainly by caterpillar tractors or cranes; by them a curve 2,000 ft. long with a maximum shift of about 30 ft. could be moved in 2 hr. Where the ground permitted, this method was used up to 80-ft. shifts. In some places the gap between the old and new embankments was bridged with rails to serve as skids over which the track was slid to its new position.

Signalling Modifications

The increase of speed made possible by these works necessitated alterations in the signalling, which is mainly three-indication semaphore or colour-light. Higher posts, longer semaphore blades, and the lengthening of blocks were among these modifications. On the double line sections three-block signalling has been introduced in some lengths, using a double yellow aspect to indicate occupancy of the third block. On single line sections the double caution system is now in force, by which the caution indication is given to denote occupancy of either the second or third block. Track circuits for level crossing signals have been lengthened.

A regular installation of speed restriction boards has also been introduced to govern the speeds of both passenger and freight trains, each board having two figures one appropriate to each class of train. The boards are 3,000 ft. in advance of the effective restrictions, and each controls the speed until the next board is reached; this may be another speed restriction board or a green no-restriction board.

The general effect of all these improvements has been to improve train services and in particular to ease the tight timings in the schedule of the Super Chief.

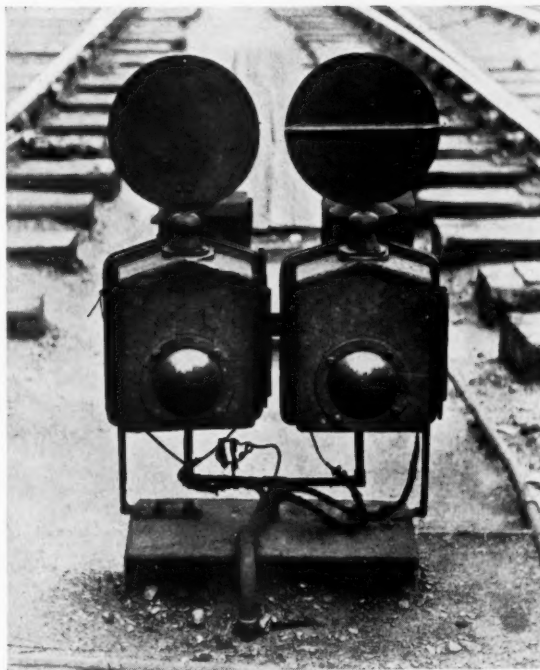
EARLY ELECTRIC SIGNALS AT VICTORIA, S.R.

A disc pattern operated by rotary hand switches

WE referred in an editorial article in THE RAILWAY GAZETTE for June 30, 1939 (page 1052) to the electric shunting signals introduced at Victoria station, London, Chatham & Dover Railway, in the early eighties by W. R. Sykes. We are now able to reproduce a photograph of two of them, taken not long before they were abolished in 1919, to make way for an all-electric power signalling installation, brought into use at that station by the S.E. & C.R. Similar signals were adopted at a few other places on the L.C. & D.R., and at Mansion House station, District Railway, where they remained in use until it became a through station. The mechanism was the same as that used for the electric distant signals which the same inventor put to work at each end of Penge tunnel, L.C. & D.R., in August, 1875, except that the indications were in that case given by a small semaphore arm, pivoted centrally just above the lens in the mechanism box. (A signal of the Penge tunnel type is now to be seen in the Railway Museum at Cairo, Egypt.)

In the Victoria shunting signals the day indications were conveyed by discs, mounted on a vertical spindle and painted red in front and white at the back. The disc was rotated by an electro-magnet through suitable gearing, and it turned on edge for the "off" position. A lock device prevented the disc from being moved from the "on" position by hand or by the action of the wind. The night indications were given by a single lens; the colours were changed by a small spectacle mechanism moved behind the lens, which was contained in a funnel shaped casting, by the electro-magnet, on the principle adopted in the search-light signals of the present day. Gas lighting was usually employed.

As a rule, full-sized levers were not used for working these signals, but rotary hand switches mounted beneath the block instrument shelf connected mechanically with the ordinary lever frame. In order to reduce the amount of such interlocking to the minimum, advantage was taken of the fact that, in the majority of cases, some running signal levers required the same or nearly the same interlocking as the electric shunt signal. Matters were so arranged, therefore, that to allow the shunt signal switch to be turned the running signal lever had to be pulled forward just far enough to operate the ordinary tappet locking commanded by it, becoming backlocked in that position by the turning of the switch handle. This method of signalling arose from the need for adding independent shunting signals—not provided to any extent in the early



Electrically-operated shunting signals installed at Victoria (Chatham side) in the eighties and in use until 1919

signalling installations in this country—without having to increase the size of the existing mechanical signal frames, impossible at places such as the Victoria (Chatham) terminus, for reasons of space.

These arrangements ultimately gave rise to the electro-mechanically signalling system, closely identified with the name of W. R. Sykes and, as recorded in our previous article mentioned above, installed by him at the Victoria (Brighton) terminus—among other places—where it remained in use until the present year. In this system all signals were operated electrically and controlled by small handles ranged above the full sized levers working the points and point locks.

Spagnoletti's Disc Block Instruments

In the editorial article on the Netherlands Rhine Railway on page 5 of our issue of July 7 we referred to the interesting fact that Spagnoletti's disc block telegraph instruments, still standard on the Great Western Railway, were used on that early Dutch line, and we stated that this was probably their only application outside Great Britain. Spagnoletti, who was of Italian descent, was for many years Telegraph Superintendent to the Great Western, but it appears that to begin with he was a kind of consultant who engaged in business on his own account, for we have recently had brought to our notice an advertisement of his, which appeared in the *Railway Diary* for 1876. In this he sets forth articles of his invention which he is prepared to supply, and he invites would-be purchasers

to apply to the Telegraph Department at Paddington. The advertisement says that his disc block instruments were used not only on the Netherlands Rhine Railway but also on the South Australian Government Railway. Spagnoletti patented these instruments in August, 1862, and they were adopted for the first section of the Metropolitan Railway, opened in January, 1863. At a meeting at the Institution of Civil Engineers held on January 27, 1863, the Resident Engineer, T. Marr Johnson, said that they had received the "unqualified approbation of Sir John Fowler, the engineer-in-chief."

In 1869 Spagnoletti patented his induced needle, with the object of making telegraph instruments no longer liable to have their indications reversed by lightning effects. This invention, by which he will always be chiefly remembered, has rendered great service to the railways.

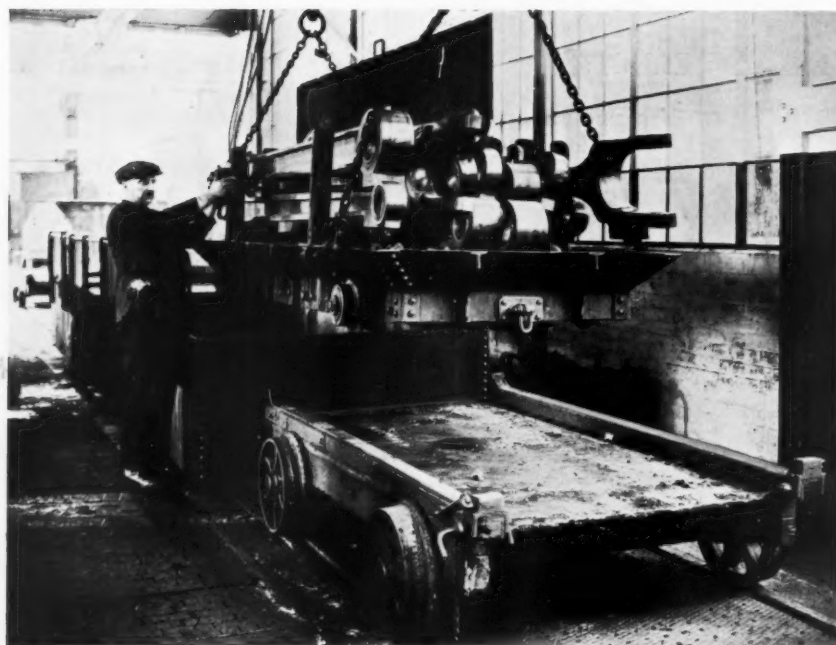


Fig. 1—A load ready for the fitting shop after treatment

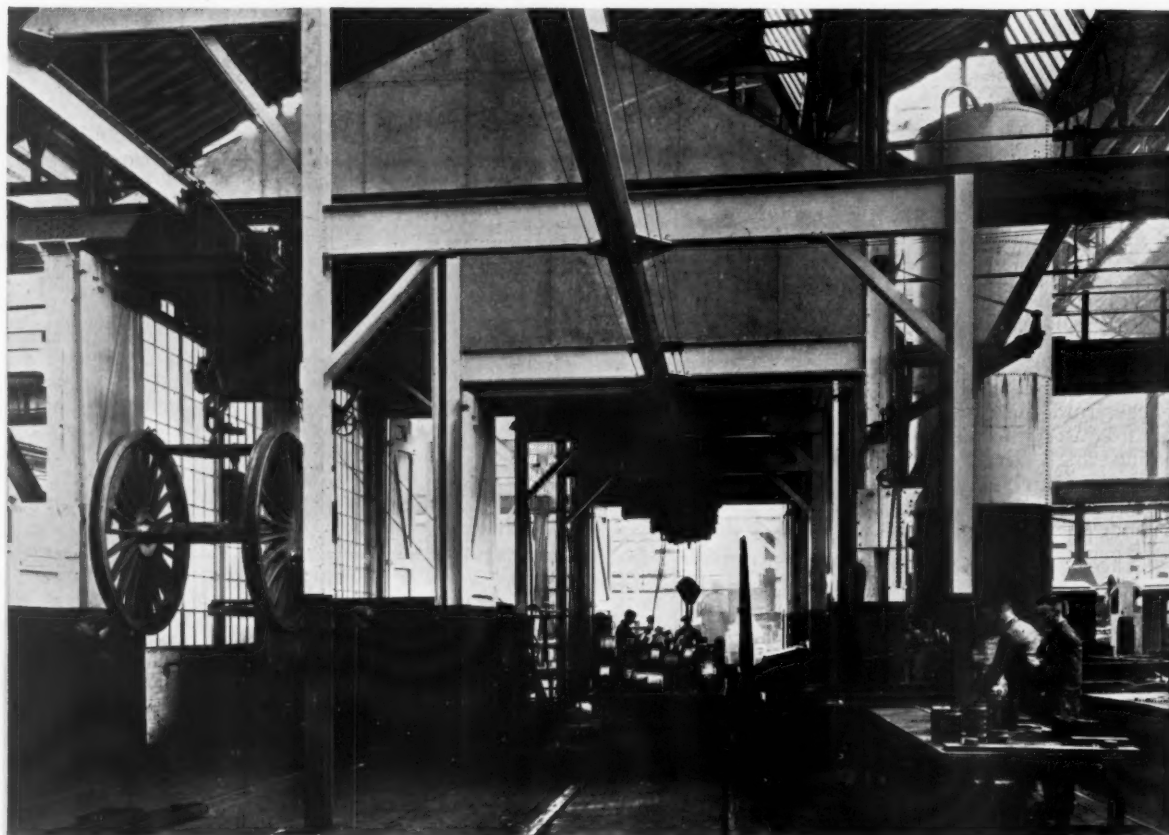


Fig. 2—General view of plant from outward end

NEW SWINDON CLEANING BOSH (See article opposite)

IMPROVEMENTS AT SWINDON WORKS, G.W.R.

New bosh installation for cleaning locomotive parts

A NEW cleaning bosh has recently been installed in the locomotive works of the G.W.R. at Swindon to supersede a plant erected there many years ago. In 1925 several modifications were made to the existing bosh with the object of increasing its capacity, reducing the quantity of chemical required, and reclaiming oil. Full advantage has been taken of the results obtained from these alterations to influence the design of the new equipment, which can now deal with all classes of locomotive wheels, bogies, and pony trucks in addition to the other component parts. The plant has been installed inside the main erecting shop between two erecting bays and adjacent to the stripping positions. A track leads directly from No. 1 stripping pit, upon leaving which a turnout diverts the trays containing the component parts to a road parallel to that which accommodates wheels and bogies. The work progresses through the bosh on both roads, and after cleaning it is deposited at the further end, from which some of the component parts are passed immediately through the inspection bench. Wheels are sent to the wheel shop, and bogies and pony trucks to adjacent pits.

The parts are picked up by overhead electrically-driven runner blocks above the inward roads, by which they are taken to and lowered into the bosh tanks and afterwards carried to the outward roads. In the case of the component parts, the block is of 5-tons capacity, while for wheels and bogies it is of 6-tons capacity. Each block is controlled by a hanging four-button control switch, the controls being for lifting, lowering, forward, and reverse. Twin tanks, each 12 ft. 9 $\frac{3}{4}$ in. by 5 ft. 9 $\frac{3}{4}$ in. inside by 6 ft. 6 in. deep, are provided for the general work, and a single tank 19 ft. 5 $\frac{3}{4}$ in. by 8 ft. 11 $\frac{3}{4}$ in. by 10 ft. 0 in. deep for wheels and bogies.

The cleansing agent is a solution of caustic soda, sodium phosphate tribasic or tri-metso at a strength of 3 per cent. This is boiled by a nest of steel steam pipes consisting of inlet and outlet headers with a number of parallel pipes along the length of the boiling tanks; the steam pressure is 80 lb. per sq. in. Hinged balanced lids seal the tanks during boiling, water evaporated from the tank passing by steel ducts from the upper portion of one side of each tank to a stack through the roof of the shop, two fans being provided in the stack to ensure complete evacuation of the steam. The condensate from the heating pipes is evacuated by means of traps, but by-passes are provided to enable a portion of the hot water to flow into the boiling tanks to make up the balance of the water evaporated after the swilling of the work has been carried out. The bottom of each boiling tank is hopper-shaped, and from the centres outlet pipes lead to two 4-in. Blackstone unchokeable pumps which can deliver the liquid to a settling tank consisting of an old Lancashire boiler standing vertically. The pumps are situated in a sump below boiling tank level but are driven by silent chains from motors mounted on the shop floor.

At every week-end the boiling liquid is pumped into the settling tank and at the beginning of a new week the top portion is run off into an oil settling tank; the solution is run back into the bosh tanks, leaving the mud, &c., at the bottom of the settling tank from which, by means of an 8-in. sludge valve, it is run into a skip. The caustic solution remains serviceable for about four months, requiring only a small weekly addition of chemical.

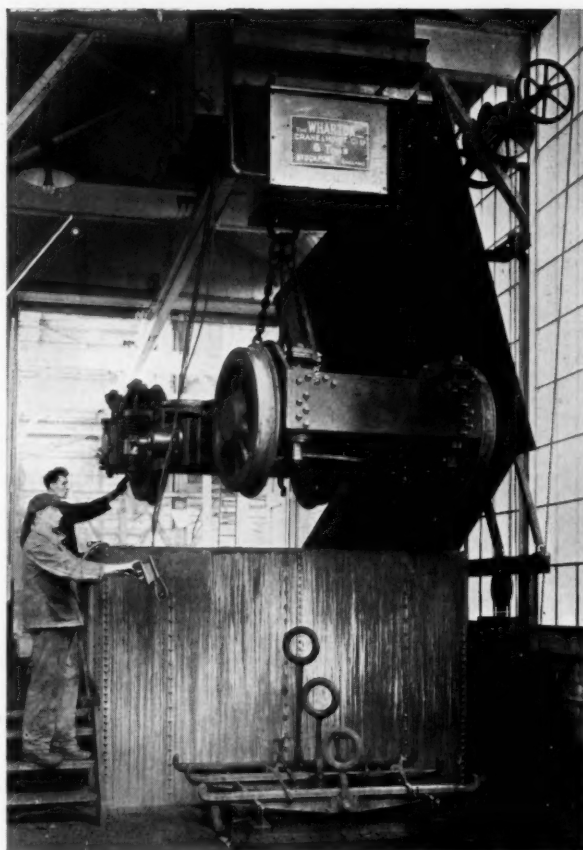
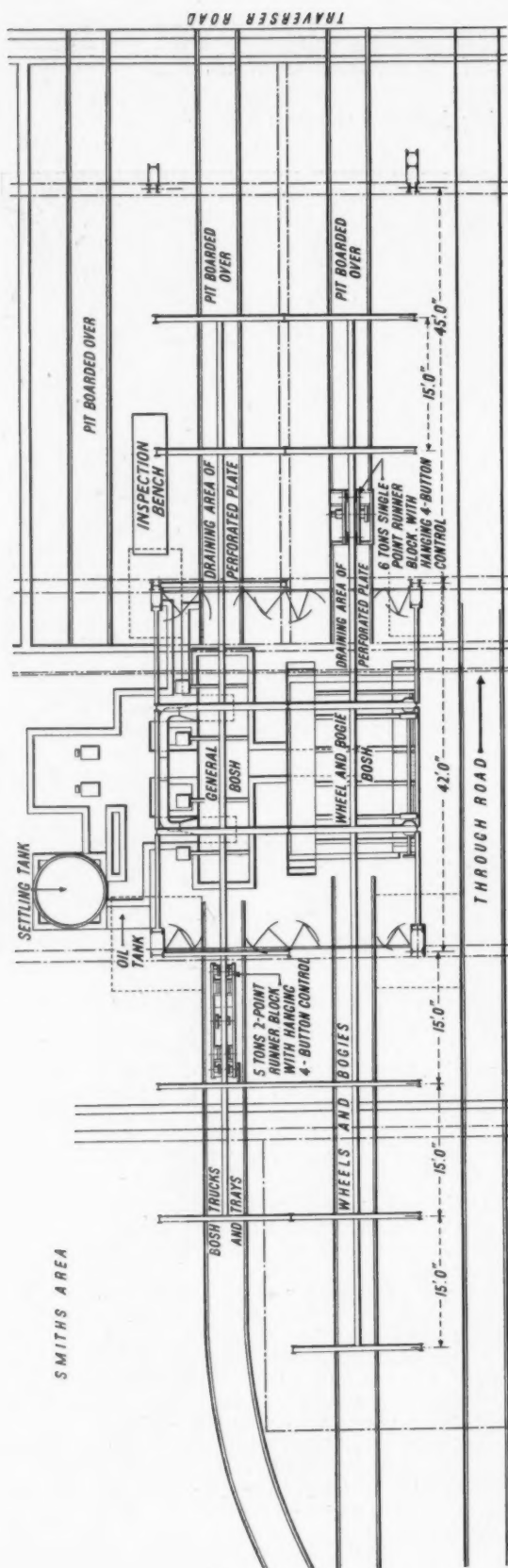


Fig. 3—Lowering a "King" class bogie into the wheel bosh

In addition to the general work, which, after cleaning, is immediately passed through the inspection bench, certain loads are sent direct to the shops dealing with them. Fig. 1 shows such a load, consisting of coupling and connecting rods and requiring no individual handling between loading up at the stripping pits and unloading at the connecting rod bench in the fitting shop. Loads of springs are dealt with similarly, and also all parts for another erecting shop, which, after cleaning, are returned to that shop for distribution. The time of immersion required is approximately 45 min. per load of 3 to 4 tons, of which about 25 min. is occupied in reaching ebullition point and the remaining 20 min. in actually boiling, so that from the two general tanks, two loads can be dealt with in the course of an hour. When the work is raised out of the boiling liquid, it is swilled by a hose to remove the loose mud which may remain on the surface of articles. This is a non-oily deposit which is easily removed by the hosing. Fig. 2 gives a general view of the plant from the outwards end. The settling tank can be seen on the right hand side, and inside the bosh enclosure, immediately on the right of the tray of rods, can be seen the hinged cover in the vertical or open position. On the left hand side a pair of



Layout of new cleaning bosh plant at Swindon, G.W.R.

6-ft. 8-in. wheels is being lowered after cleaning. In Fig. 3 we illustrate a "King" class bogie being lowered into the bogie and wheel bosh, the lid of which, on account of the bigger area of the tank, is raised and lowered by means of a handle and chain wheel. Immediately in front of the boiling tank are three spreaders used for different diameters of wheels and it will be seen that there are hooks to rest on the flange of each tyre so that the spreader remains in position and keeps the lifting eye available for easy entry of the block hook. A corresponding vertical rod is placed in the bogie centre to hold up the top ring of the chain slings so that in a similar manner the crane hook may easily find the lifting eye. Two pairs of flat-bottom rails are supported above the steam pipes of the wheel bosh, the outer pair at a gauge of 4 ft. 8½ in. and the inner pair at a gauge of 2 ft. 8½ in.; both pairs are central with the overhead runner block track. Bogies and pony trucks are lowered so that the treads of the wheels rest on the outer pair of rails in the normal rolling stock manner, but pairs of wheels are lowered askew so that the flange of each wheel rests on the top of the inner and outer rails of each pair and the four rails act as scotches. This method of accepting single pairs of wheels was adopted to avoid difficulty on account of the effect of the balance weights, and it also increases the wheel capacity.

This boshing plant is capable of dealing, within the normal 8½-hour day, with all the work from both erecting shops, which previously required two boshes working day and night shifts, and in addition, handles bogies and wheels which previously were cleaned by hand scraping. The general layout of the plant is shown alongside.

American Signal Legislation

On May 25, 1939, the Interstate Commerce Commission of the U.S.A., as a result of an Act of Congress of 1937 and after discussions with representatives of the railways, issued an order requiring them to comply with a set of rules, standards and instructions for the installation, maintenance and repair of railway signal equipment. Manual block signal apparatus was, however, not included, probably because it plays such a subordinate part in American railway working today and usually consists of little more than telegraphic or telephonic communication between stations and comparatively simple signals. The railways have to comply with certain parts of this order by September 1 next, but for meeting the requirements of other sections time may be granted on application to the commission. This legislative step goes far beyond any official printed requirements relating to similar matters in most other countries, containing clauses dealing with the detailed construction and adjustment of numerous devices, even to the extent of laying down dimensions for clearances and the operation of many of the working parts of signal appliances.

The order is, no doubt, representative of the best modern U.S.A. practice in general, and most of the principal railways will not have much difficulty in complying with it, although they may have a number of installations still in work which would need bringing up to date; this is covered by the conditions governing a grant of extension of time. There will, however, probably be quite a number of lines that will be put to considerable expense to meet the new situation. A very important part of the new legislation is that covering the making of tests on apparatus. Comment in the American press is so far rather reserved in tone, but it is evident that some lines hope that, as experience is gained, there will be some relaxation of certain of the requirements.

TRAIN STARTING PROCEDURE, SWISS FEDERAL RAILWAYS

Equipment for giving brake-test orders to train crews at Zurich main station

ELECTRICAL apparatus has been installed on the platforms at Zurich main station, Swiss Federal Railways, for communicating between the platform official dealing with the traffic and the signal box, which is on the all-electric system and was described in THE RAILWAY GAZETTE for February 4, 1938, page 883. It is also used for ordering the prescribed brake tests before trains depart. The switchboard (seen in the illustration), has a train description indicator dial, indicators repeating the position of certain signals, telephone, and push-buttons for conveying instructions to the train crews to test the brakes before departure. The platform awning carries the brake testing signals and lamp-type route indicators referring to the train movement concerned. The apparatus was made by the Signum Company of Wallisellen, near Zurich.

Right: The signalling panel on the platform at Zurich main station, Swiss Federal Railways



Crowds in the concourse of Waterloo station, Southern Railway, at the beginning of the August holiday week-end



EDINBURGH CONTRASTS: WAVERLEY STATION THEN AND NOW

Two photographs taken from the same spot, the upper one about 1850 and the lower one in March last, and now reproduced by the courtesy of "The Scotsman." Familiar landmarks, including the Scott Monument, are seen in both and emphasise the marked changes that have taken place in the intervening period, including the erection of the North British Station Hotel with its clocktower, and the General Post Office (extreme right). The Waverley station roofs and the new North Bridge contrast with the old bridge, and the old North British railway station reached by the steps on the right of the old bridge. In the middle of the upper picture can be seen the station of the Edinburgh-Leith railway, to which the trains gained access through Scotland Street tunnel (see page 219)

RAILWAY NEWS SECTION

PERSONAL

Mr. Harold W. Clapp, M.Inst.E.E., who since 1920 has been Chairman of Commissioners, Victorian Government Railways, has been appointed by the Federal Government of Australia to be General Manager of Commonwealth Aircraft Construction.

Mr. G. E. Hitchcock, who for 32 years, has been rating agent for the Southern Railway and its constituent companies, will retire on September 30. Mr. G. Endicott has been appointed Estate and Rating Surveyor for the company, as from October 1.

L.M.S.R. APPOINTMENTS

The following appointments have been approved by the directors:—

Mr. R. P. Humphrys, Solicitor Assistant (General), Euston, to be Assistant Solicitor, Euston.

Mr. N. Turnbull, Solicitor Assistant, Euston, to be Senior Conveyancing Assistant, Euston.

Mr. A. E. Peters, Assistant Works Superintendent, C.M.E. & E.E. (C. & W.) Department, Wolverton, to be Works Superintendent, C.M.E. & E.E. (C. & W.) Department, Wolverton.

Mr. J. Laurie, Assistant District Controller, Polmadie, to be District Controller, Polmadie.

Mr. A. Ford, Assistant District Controller, Carlisle, to be Assistant District Controller, Polmadie.

Mr. G. W. Ainscough, Goods Agent, Alexandra Dock, to be Goods Agent, Park Lane.

Mr. W. A. Mather, Assistant District Goods and Passenger Manager, Ayr, to be Goods Agent and Harbour Collector, Ayr.

Mr. J. Lightburn, Chief Delivery Clerk, Edge Hill, to be Goods Agent, Alexandra Dock.

Mr. J. Smith, Assistant Stationmaster, Glasgow (St. Enoch), to be Stationmaster, Dumfries.

Mr. H. Limb, Stationmaster and Goods Agent, Tyldesley, to be Stationmaster and Goods Agent, Pontefract (Monkhill); also in charge of Pontefract, Baghill Goods, L.N.E.R.

Mr. W. G. Shipp, Stationmaster, Darnall, L.N.E.R., has been appointed Stationmaster, Dewsbury, with charge of Earlsheaton and of Batley Carr.

Mr. H. T. L. Champness, Stationmaster, Staveley Town, L.N.E.R., has been appointed Stationmaster, Northumberland Park.

Mr. Harold W. Clapp, M.Inst.E.E., who has been Chairman of the Victorian Railways Commissioners since 1920, has, as announced on this page, been appointed by the Australian Government to be General Manager of Commonwealth Aircraft Construction. Mr. Clapp was born in Melbourne in 1875, and received his engineering training as an apprentice with the Austral Otis Company. He then



Mr. Harold W. Clapp

Chairman, Victorian Railways Commissioners, 1920-39, appointed General Manager of Commonwealth Aircraft Construction

served for five years on the engineering staff of the Brisbane Tramway Company, before proceeding to the United States to obtain additional technical experience. In the U.S.A. Mr. Clapp served for some years with the General Electric Company at Schenectady, and then began his railway career, and in 1908 joined the Southern Pacific Company, being given entire charge of the engineering details in connection with the electrification of suburban lines at Oakland, Alameda, and Berkeley. Mr. Clapp was also associated with the Atlantic, Camden & New Jersey Railroad, and later gained valuable experience as Vice-President of the East St. Louis & Suburban Railway, and of the Columbus Railway, Power & Light Company. He resigned from the last-named appointment in 1919 to take up the vice-presidency of

E. W. Clark & Company, a banking concern having large railway interests in various parts of the U.S.A. Mr. Clapp was appointed Chairman of the Victorian Railways Commissioners in 1920. In 1924 he was Chairman of the Interstate Commissioners' Conference in Melbourne. Since his first appointment, his five-year terms of office as Chairman of the railway commissioners have been regularly renewed upon their expiry, up to the present moment when his transference to another sphere deprives Victorian railways of a personality to which they are proud to acknowledge their indebtedness (see page 193).

L.N.E.R. APPOINTMENTS

The directors of the L.N.E.R. announce the following appointments:—

Mr. A. L. Crewe, Chief General Manager's Office, King's Cross, to be Staff Assistant to the Divisional General Manager, Southern Area, in succession to Mr. B. L. J. Fosdike, who will retire from the service at the end of September next.

Mr. G. F. Fiennes, Superintendent's Office, Liverpool Street, to be Assistant District Superintendent, Edinburgh, in succession to Mr. H. F. Pallant, who has recently been appointed Assistant to Superintendent, Southern Area.

Mr. C. G. Jarrett, Hotels Manager, Southern Scottish Area, to be Hotels Superintendent, Scottish Area.

Mr. G. A. Souter, Manager, North British Station Hotel, Glasgow, to be Assistant Hotels Superintendent, Aberdeen.

Dr. J. D. Gunn (M.D., Ch.B., F.R.C.S., Edin.), Assistant

Medical Officer, North Eastern and Scottish Areas, to succeed Dr. J. G. McBride as Medical Officer, North Eastern and Scottish Areas. Dr. McBride's retirement was recorded in our issue of July 28.

Dr. J. Sharp Grant, M.B., Ch.B., F.R.C.S. (Edin.), to be Assistant Medical Officer, North Eastern & Scottish Areas, in succession to Dr. Gunn.

We regret to record the death on July 25 of Mr. P. D. Fitzpatrick, General Manager of the Grand Trunk Western Lines of the Canadian National Railways. Mr. Fitzpatrick, a native of Springfield, Illinois, and a graduate of the Armour Institute, Chicago, began service with the Grand Trunk as transit man at Bay City, Michigan, in May, 1913. He occupied various engineering posts until June, 1918, when he was

appointed Chief Engineer of the Central Vermont. An outstanding achievement was the rehabilitation of the Central Vermont after the disastrous flood of 1927. From 1930-32, Mr. Fitzpatrick was Assistant Chief Engineer of the Montreal terminal development. He was later appointed Chief Engineer of the Grand Trunk Western Lines with headquarters at Detroit. In December, 1938, on the retirement of C. G. Bowken, Mr. Fitzpatrick was named to succeed him as General Manager. His jurisdiction extended over lines in Michigan, Indiana, and Illinois as well as the company's Lake Michigan car ferries.

Mr. H. R. Fox, M.Inst.C.E., has been confirmed by the Secretary of State for the Colonies in the post of General Manager and Chief Engineer of the Jamaica Government Railway, as from January 12, 1939. Mr. Fox was born in Jamaica in November, 1889.

After his schooldays at Epsom College, England, he graduated as B.Sc., Mining and Civil Engineering, from the Massachusetts Institute of Technology in 1912. Mr. Fox worked on railways in Canada and in the West Indies from 1912 to early 1915, and served in the great war with the Royal Engineers in France from 1915 to 1918, retiring with the rank of Captain. From 1919 to 1921, he served as District Engineer, P.W.D., British Guiana, and as Engineer in the bauxite mines on the Demarara River. From 1921 to 1926 he worked on the Jamaica Government Railway as Construction Engineer, and was appointed Chief Engineer in 1926, which post is now combined with that of General Manager. (See editorial notes on page 194.)

An interesting function took place recently in the Ca'doro Restaurant, Glasgow, when a presentation was made by the members of the staff to Mr. James Aitchison, Chief Clerk, Central District Engineer's Office, London Midland & Scottish Railway, on the occasion of his retirement from the service of the company. Mr. Robert W. Cairns, M.Inst.C.E., District Engineer, presided and thanked Mr. Aitchison for his long and faithful service to the company in a period of over 50 years, for 26 years of which he had acted as Chief Clerk; he had achieved the remarkable record of only one day's absence from duty during his whole service with the company. Mr. A. H. McMurdo, M.Inst.C.E., Divisional Engineer, also spoke. Mr. Aitchison, in reply, gave a résumé of his career which showed that he started work in the Old Caledonian Railway as



Mr. H. R. Fox

General Manager and Chief Engineer,
Jamaica Government Railway

a boy in the Collector's Office at Bowling Harbour, and after service in the office in Glasgow of the General Superintendent of the Caledonian Railway he joined the staff of the Civil Engineering Department in 1896.

Mr. Aitchison was presented with a wireless set, and a gift of a nest of tables was made to Mrs. Aitchison.

TRIBUTES TO MR. C. S. HARRIS

As announced in THE RAILWAY GAZETTE of April 21 last, Mr. Charles Reginald Schiller Harris retired on June 30 from the position of Director-General of the Buenos Ayres Great Southern and B.A. Western Railways, which he had occupied since 1935, and returned to England on July 5, travelling *via* Chile and the West Coast. Prior to leaving Buenos Aires, Mr. and Mrs. Harris were the recipients of numerous demonstrations of esteem from the members of the British and Argentine communities. One of these took the form of a cocktail party, in honour of Mr. Harris, given at the English Club by the local directors, chief officers and senior staff of the Great Southern and Western Railways, at which some 150 persons were present. The gathering included:—

Dr. Guillermo E. Leguizamon, K.B.E. (Chairman of the local boards of both companies), the Hon. Stephen E. Vivian Smith; Doctors R. Bullrich and E. Herzfeld; Engineer D. Ardigo; Messrs. R. Stuart, J. C. Angel, R. Montgomery, J. W. H. Rea, T. B. Stewart, O. Steven, H. N. Anderson, J. H. Sommerville, F. E. A. Rowell, J. E. Sandham, C. H. Hadcock, G. A. Brougham, G. R. Mawson, and A. H. Coleman.

The principal spokesman was Engineer Ardigo, who said that the large number present testified to the popu-

larity of Mr. Harris, who had done much to foster the good relations existing between Argentina and Great Britain. Mr. Harris's departure, Engineer Ardigo said, was a loss to Argentina, but this was compensated by the fact that Mr. Harris would be able to tell the British people of the opportunities and advantages which Argentina offered. Engineer Ardigo also paid a tribute to Mrs. Harris, and wished both a very happy journey and a prosperous future.

Mr. Harris, in reply, said that it was indeed difficult for him to express the emotion he felt at leaving his colleagues, whose friendliness and co-operation had always been of great help to him. The four years he had spent in Argentina were a period of complete happiness.

Major Oscar Loewenthal, General Manager, Buenos Ayres Great Southern and Buenos Ayres Western Railways, returned to Buenos Aires on July 10 after an extensive tour through South Africa, Rhodesia, Portuguese East Africa, and the Belgian Congo.

We regret to record the death on July 20 of Mr. Timothy O'Connor, for several years Manager of the former Cork & Muskerry Railway. He entered the service of the railway at an early age, and after acting as Secretary for three years was appointed Manager.

INDIAN RAILWAY STAFF CHANGES

Lt.-Colonel R. E. Gordon, M.C., R.E., Senior Government Inspector of Railways, Bangalore, has been promoted to be a provisionally permanent Deputy Chief Engineer, State Railways, as from May 19.

Mr. S. Barber has been appointed to officiate as Deputy General Manager (Works), G.I.P.R., as from May 26.

Mr. K. C. Srinivasan has been confirmed as a Deputy Chief Accounts Officer in the Indian Railway Accounts service.

We regret to record the death on August 6, at the age of 65, of Mr. S. D. White, a Director of The General Electric Co. Ltd. Mr. White had been Manager of the Government and Railways Department.

Mr. F. Le Neve-Foster has been appointed to the board of Crompton Parkinson Limited. Mr. Le Neve-Foster is a member of the firm of Warren, Murton, Foster & Swan, solicitors, and has been associated with the company for many years. He is also a Director of the Stanton Ironworks Co. Ltd., and other well-known companies.

STAFF AND LABOUR MATTERS

Railway Shopmen

An announcement appeared in the *Railway Review* last week stating that an intimation has been received that, as a result of consideration which has been given to the position of the lowest paid grades in the railway service, the railway companies have decided, in order to keep in line with their decision on conciliation grades, to increase the minimum rate of pay of workers in shop grades, as from the beginning of the first full pay period after July 29, 1939, as under:—

Adult male shop staff employed on time work at present in receipt of 44s. 6d. a week (i.e., 28s. plus 16s. 6d. war wage) to be increased to 45s. a week (i.e., 28s. 6d. plus 16s. 6d. war wage).

Adult male shop staff employed on time work at present in receipt of 45s. (i.e., 28s. 6d. plus 16s. 6d. war wage) a week, to be increased to 45s. 6d. a week (i.e., 29s. plus 16s. 6d. war wage).

The Executive Committee of the National Union of Railwaymen has given consideration to the position, and has decided to report the matter to the special general meeting to be held on August 11, 1939.

Railway Wages

The meeting between the general managers and the Associated Society of Locomotive Engineers & Firemen did not take place on Friday, August 4, as expected. Apparently the general managers desired the meeting to be between them and the three railway trade unions, and to this the Associated Society of Locomotive Engineers and Firemen would not agree but insisted on a separate meeting. This led to the exchange of several letters between the railway companies and the society, and finally arrangements were made for the meeting to be postponed until Thursday, August 10, when the general managers met representatives of the Associated Society of Locomotive Engineers & Firemen in the morning, and representatives of the other two unions, the National Union of Railwaymen and the Railway Clerks' Association, in the afternoon.

Mr. W. J. R. Squance, the General Secretary of the Associated Society of Locomotive Engineers & Firemen, on August 4 said, "We have adopted this policy, not in antagonism to the other railway unions but because there is provision in the machinery of negotiations for individual unions to conduct their own negotiations on matters that directly affect their own members, and the items in dispute between this society and the railway general managers are separate and distinct from the items of other unions which have been under negotiation. While we have a wage advance, in our programme we have also extended holidays with pay, increased payment for Sunday duties, and the abolition of the extended roster of duties which neither of the other organisations is pursuing.

We naturally took the view that our claims are distinct and separate so far as those items are concerned. The fight is on but the executive will restrain any precipitate action. Between now and Thursday the members of the executive and the permanent officials of the society will be touring the branches so that the position can be explained properly and understood. We are satisfied that the fundamental principles involved will receive the unanimous support of our members."

Circulars and posters are being prepared for distribution. One of the circulars reads as follows:—

Locomotive men, the railway companies have forced your representatives to decide that you must take strike action if you desire to enforce upon the companies a recognition of the justice of your claims.

Drivers, firemen, and cleaners, your future is at stake, and only your strong determination to fight for your rights will preserve your status and obtain a proper remuneration for the labour value of your craft.

Special meetings will be held in your district to empower your Executive Council to take the necessary steps for a withdrawal of labour. It is essential that all members attend these meetings and give the necessary support to your Executive Committee in their struggle to preserve the future of locomotive men.

It is your fight. Prepare for action.

A special delegate conference of the National Union of Railwaymen is meeting in London today to consider the position arising from the decision of the railway companies to raise the minimum wage to 45s. a week as from the first full pay period after July 29, 1939. Over 15,000 railwaymen in the lower grades have already benefited from this decision.

The following resolution was passed by the Carlisle branch of the National Union of Railwaymen, last Sunday, August 6:—

That we instruct our delegates to the special delegates' meeting in London, next Friday, to vote against the acceptance of the companies' offer of a 45s. minimum wage. Further, we instruct our negotiating committee to open up the negotiations for a 50s. minimum, and failing satisfaction that we declare strike action.

RAILWAY AND OTHER REPORTS

Great Southern Railways Company.—The Directors of the Great Southern Railways Company, at their meeting on August 4, had the accounts before them for the half-year ended June 30, 1939, and regret that no interim dividends on the 4 per cent. guaranteed preference or on the preference or ordinary stocks of the company are available.

Ottoman Railway Holding Company.—The net profit for the year ended June 30 amounted to £40,537 (against £41,334). After providing for the interest in full at the maximum rate of 3 per cent., less tax, on the "A" and "B" income debenture stock, £7,805 remains to be applied towards the redemption of the "A" and "B" stocks, *pari passu*.

Thomas Tilling Limited.—The directors are maintaining the interim ordinary distribution at 5 per cent., less tax. The total dividend for the 12 months ended December 31 last was brought up to 10 per cent. by a final payment of 5 per cent.

Illinois Car & Equipment Company.—Announcement is made of a further distribution under the dissolution of the company, of (10 cents) 6d. a share, payable on September 30, 1939, from funds now available for this purpose. The transfer books of the company will be closed from September 1 to 30 inclusive.

South Behar Railway Company.—Consequent upon the termination of the company's contract with the Secretary of State for India, voluntary liquidation was approved by stockholders

on July 20, and a return of capital of 100 per cent. has been declared payable by the liquidator. The debenture stock was repaid at par on July 1. It is expected that the liquidation will be completed, and an additional small distribution made, before the end of the year.

Vickers Limited.—At a meeting of the board held on July 20 the under-mentioned interim dividends were declared: 2½ per cent. actual, less tax, on the preferred 5 per cent. stock; 2½ per cent. actual, less tax, on the 5 per cent. preference stock; 2½ per cent. actual, free of income tax, on the cumulative preference stock. Payment will be made on August 25.

ARGENTINE RAILWAY EARNINGS.—The gross receipts of the privately-owned Argentine railways for the first ten months (July-April) of the financial year, 1938-39, amounted to 335,296,000 pesos m/n., or 5,019,000 pesos (1.5 per cent.) less than in the corresponding period of the previous financial year. The receipts of the British-owned railways, included in the above figures, were 304,405,000 pesos, or 5,855,000 pesos (1.9 per cent.) less. The marked recovery in goods traffic continued, the decrease in the aggregate for the ten months amounting now to only 871,000 pesos, or 0.4 per cent. On the other hand the fall in passenger receipts is accentuated, amounting to 3,298,000 pesos, or 4.3 per cent., although the number of passenger journeys was greater by 3.2 per cent.

MINISTRY OF TRANSPORT ACCIDENT REPORT

Stobcross West Junction, L.M.S.R. : February 22, 1939

Major G. R. S. Wilson was the Inspecting Officer who inquired into the accident at Stobcross West Junction on February 22, when, at about 2.2 p.m., the 1.52 p.m. up passenger train, Possil to Rutherglen, composed of four bogie coaches drawn by an 0-6-0 tender engine, tender leading, ran into the side of the leading coach of the 1.2 p.m. up passenger train, Balloch to Rutherglen, consisting of six bogie coaches drawn by an 0-4-4 tank engine. Both engines had Westinghouse brake

phore type block instruments with extra "train on line" indication at the leaving end of the section. The section signal is released by "line clear" being received, and its lever, when pulled, is backlocked until the "entering section" signal is duly acknowledged. The lever must be fully normal before "line clear" can be given to the box in rear and a second train cannot be accepted until the first has passed over an electric treadle on going into the section in advance. Sealed releases are provided for use in the event of treadle failure; they were found intact after the accident. The apparatus was in proper order and both instruments were found showing "train

also provided to work warning needle indicators while wheels are passing over them. There is a secondary peak of traffic in the middle of the day and Signalman Todd, at Stobcross box, was working under some pressure at the time of the accident; there had been some shunting movements to deal with just before.

Driver J. Marshall, of the train from Possil, found Stobcross distant "on" but outer home, No. 11, "off." Approaching the junction at about 15 m.p.h. he saw No. 12 also "off" and the signal ahead of it, No. 27 as well. He at first thought the Balloch line train was stationary on the down line to Partick but, quickly realising the facts, applied the brake fully a few seconds before the collision. His fireman confirmed this. Driver McPhail, of the train from Balloch, found Stobcross distant "on" and drove accordingly. Travelling at 5 m.p.h. past the

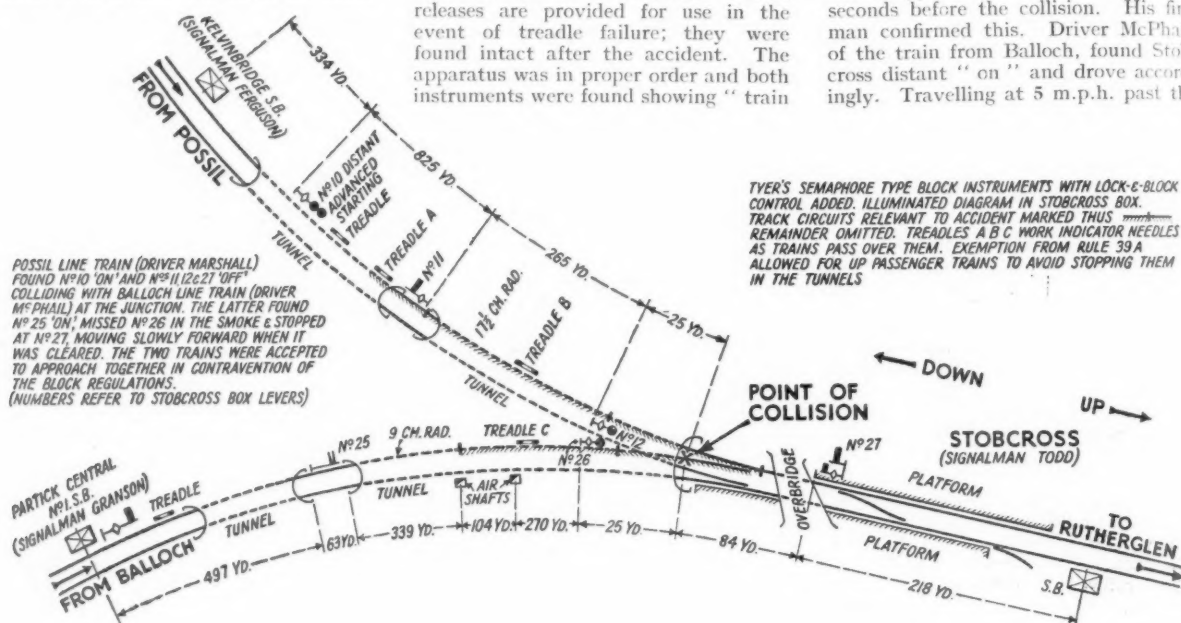


Diagram illustrating collision

working with vacuum brake on the train. One passenger was killed and three were detained in hospital; 45 suffered minor injuries or shock at the time, while 113 others complained of it later. There was a considerable amount of damage to certain vehicles, as well as to permanent way, signalling equipment, and cables. The weather was clear and dry. Rescue work, hampered by restricted space, was promptly and efficiently carried out. The layout of the lines at the junction, which the two trains had been allowed to approach simultaneously in contravention of the block regulations, is shown on the accompanying diagram, with signals and certain other relevant details. The situation, being almost entirely in tunnel with a good deal of steam-hauled traffic passing, especially at certain hours, is far from favourable to easy observation of signals.

Lock-and-block working is in operation, using Tyer's two-position sema-

phore type block instruments with extra "train on line" indication at the leaving end of the section. The section signal is released by "line clear" being received, and its lever, when pulled, is backlocked until the "entering section" signal is duly acknowledged. The lever must be fully normal before "line clear" can be given to the box in rear and a second train cannot be accepted until the first has passed over an electric treadle on going into the section in advance. Sealed releases are provided for use in the event of treadle failure; they were found intact after the accident. The apparatus was in proper order and both instruments were found showing "train

air shafts, he felt his way cautiously to signal No. 26 but could see very little ahead. He realised that he had missed this signal and found No. 27 "on" when he caught sight of it. He stopped at once and it was lowered after he whistled. He had travelled about a coach length when the collision occurred, No. 27 having been lowered for the other train. Chalmers, the fireman, generally confirmed this. Neither he nor the driver were much disturbed at having over-run No. 26 and McPhail regarded the mistake as a technical irregularity, quite frankly stating that he expected a clear run through the junction, hence his ready acceptance of No. 27 when it was lowered. During the last 11 years he had not once known Nos. 12 or 26 to be against him. Others confirmed this fact.

Signalman Granson, Partick Central, said the Balloch line train was accepted at 1.58 p.m., just as it was starting from the station itself; "entering

section" was at once acknowledged, and this was proved by the electric locking arrangements and his acceptance immediately after of another train from the rear. Todd asked him about two minutes later if he had a train coming towards Stobcross. He said not, thinking that Todd could not possibly be referring to the Balloch train, as that would be indicated on Todd's instrument. He had never known such an inquiry before.

Signalman G. Ferguson, Kelvinbridge, said that the Possil line train was accepted at 1.59 p.m., when offered, and "entering section" was sent at 2.1 p.m. He received "obstruction danger" 4 min. later.

Signalman Todd had been in Stobcross box for nine years. He said that he was offered the Balloch train at 1.49 p.m., but did not accept it as it was not then "routed." (Trains are offered on the block from Partick and Kelvinbridge when those boxes accept them, but Stobcross does not accept until a "route" bell signal—on a special bell—is given on the trains being ready to leave those places, at which time "is line clear?" is once more offered, the object being to allow Stobcross to decide precedence at the last moment.) Todd then dealt with a goods train from his yard to Partick and accepted the Possil line train at 1.56 p.m., getting it accepted by Anderston Cross at 1.59 p.m., according to the register there. He got the impression that the Balloch line train had passed, and telephoned, as stated above, to Granson; he did not look at his block instruments before this conversation. He realised that something was wrong on seeing the track circuits occupied on both lines and reversed his signals against the Possil train. He was much distressed at his failure and unable to give a clear explanation of his actions which led to the mistake. He had no recollection of accepting the Balloch train at all; he said his conversation with Granson took place just before accepting the other train. On receiving Granson's negative reply he concluded that the Balloch train must have passed him, and he therefore accepted the Possil train. It was his being rushed that led him not to verify the position from his instruments.

Inspecting Officer's Conclusions

The primary responsibility must rest on Signalman Todd. Evidence is conclusive that both trains were allowed by him to approach at the same time, but is not sufficient to determine which of them was accepted first. Register entries are not of much assistance. It transpired that the Kelvinbridge signalman had omitted to make those for a train from Stobcross which had passed him 14 min. before the accident. Little reliance is placed on Todd's statements. Anderston Cross accepted a train at about the time "entering section" should have been received at Stobcross from Kelvinbridge, and it is clear that, as a result of that acceptance, Todd cleared his signals for the Possil line.

It may be that the Balloch train was accepted by him automatically, leaving no impression on his mind, his attention being diverted to the goods train. After "entering section" was received from Kelvinbridge he may have had his doubts and telephoned to Granson. Momentary forgetfulness in a busy box is understandable, but it is difficult to understand why Todd did not realise that a glance at his instruments would have verified the position. He is 49 years of age, a signalman for 20 years with a good record.

Driver McPhail must bear a lesser degree of responsibility, but is not held seriously to blame. He stopped promptly at No. 27 signal, and was evidently not much concerned to observe No. 26, which he had never seen at "danger" for 11 years. Such a signal is likely to lose its significance, especially when not very conspicuous at the best of times. Marshall had no opportunity to avoid or minimise the collision.

Remarks and Recommendations

The lock-and-block on these lines is comparatively old fashioned, but, especially as there is no free release, goes far to ensure that a following train cannot be accepted until the preceding one has passed clear of the section. The excellent freedom from collision on this densely worked underground system is a tribute to its efficiency. At this junction, however, reliance is still placed on signalman's obedience to the block regulations to prevent the acceptance of two converging movements. Interlocking between the block instruments, which should not be difficult to arrange, would be a valuable addition and would have prevented this accident. The company should give consideration to its provision here and elsewhere where traffic conditions may be similar. If really necessary to retain greater freedom for freight train working, it would be comparatively simple to arrange a time release oper-

ated by track circuit, to ensure a train being brought to a stand before a converging movement was accepted. For passenger trains the signals, Nos. 12 and 26, protecting the junction, have little significance in normal working. The instruction in force at Stobcross box, preventing the stopping of a passenger train in a smoky tunnel, is not criticised; the result, however, in practice is that the signals are of no service except in emergency, in which case a collision might well ensue if one of them was overrun by a few yards only. On account of the extremely short distance to the fouling point, it is doubtful if automatic train control of the train-stop type would have been effective in preventing this accident.

Under the prevailing conditions these ground signals are difficult to locate, and can be seen only at short range. Some improvement is certainly necessary. Consideration should be given to the substitution of colour-light signals. It would be advantageous if these could be arranged nearer the level of the driver's eye; if they were also placed farther back from the junction there would be less risk in the event of an overrun, especially if co-acting detonator placers were provided. It may, however, be better to retain the signals in or near their present position on account of the clearer atmosphere at the junction where the tunnel is of larger dimensions. In that case repeaters should be provided farther back, perhaps supplemented by gongs, operated by the wheels of passing trains, to draw attention to their position. The company might also consider the installation of colour-light signals at other points on this underground system where the visibility may be unduly limited by atmospheric conditions. The retention of the outer home signal No. 11, on the Possil line, appears of doubtful value. Its distance, 265 ft. only, from the home signal precludes its use for acceptance when the junction is occupied.

Edinburgh Contrasts

We sent a copy of the Edinburgh photographs, reproduced on page 214, to Mr. Norman D. Macdonald, who, with his intimate knowledge of Edinburgh, his native city, has sent us the following observations:—

"In the upper picture the large tripartite building in the front with the ventilating louvres may be called the original nucleus of the Waverley station. The Edinburgh & Glasgow Railway, having been pushed eastwards from its first terminus at Haymarket by the tunnel under the Caledonian station and through the Princes Street Gardens, was joined to the Edinburgh & Berwick Railway under the shadow of the North Bridge. From this union sprang the North British Railway. The original Edinburgh & Berwick station beside the North Bridge was very small and would barely hold two of the modern coaches, just like the Edinburgh & Glasgow one

at Haymarket, a part of which can still be seen on the north side.

Mr. Macdonald points out something in the upper picture which might easily be missed—the little carriages of the Edinburgh, Leith & Granton Railway standing in the company's station at right angles to the present Waverley station. This site is now occupied by the Waverley market with the Princes Street Gardens above—an idea which Mr. Macdonald's father advocated in a letter to *The Scotsman*.

Mr. Macdonald continues: "The square chimney seen at the south end of this station (upper picture) is that of the engine which ran the rope by which the trains were hauled up three-quarters of a mile of very steep line from Scotland Street station. . . . Till about 1896 the East Coast expresses from King's Cross came in at the old Edinburgh & Berwick platform.

QUESTIONS IN PARLIAMENT

Half-Fare Rates for Children

Mr. Ellis Smith (Stoke—Lab.), on August 2, asked the Minister of Transport whether, in view of the forthcoming raising of the school-age to 15 years, he would consult with the railway companies with a view to making half-fare rates for children available up to the age of 15 years.

Captain Euan Wallace: The railway companies inform me that they have this question under consideration.

Railways and Leicester Blackout

Mr. L. Kimball, on August 2, asked the Lord Privy Seal whether he was aware that the trial blackout in the Midlands on the night of July 13-14 was a complete failure in the Leicester area owing to the fact that the various railway authorities failed to extinguish their lights on the grounds that they had been instructed by his department that they need not do so because they were not included in the area; and would he take steps to ensure that in future conflicting instructions were not issued by the air-raid precautions department to different authorities in the same area.

Sir John Anderson (Lord Privy Seal), in a written reply, states:—I regret that there was some confusion in this area owing to a misunderstanding of the intentions of the Leicester City Council. It was left to each local authority to decide whether it would co-operate in the blackout on this occasion; and the Town Clerk of Leicester informed my department on June 26 that his authority did not propose to take part in the blackout. In a subsequent letter he stated that his council would be recommended to co-operate; but no notification of the council's final decision was received, and in consequence the railway companies were not asked to co-operate in the Leicester area.

Live Rail Accidents

Brigadier General Clifton Brown (Newbury—C.), on August 2, asked the Minister of Transport how many accidents had occurred on the Southern Railway during the last 12 months from people coming in contact with the live rail; and how many miles of the new protective fencing had been put up by the company during that period.

Captain Wallace: During the 12 months ended July 27 last, eight people were killed and 50 injured on the Southern Railway through contact with the live rail. The company informs me that during the 12 months ended June 30 last it has erected 57 miles of special fencing.

Brigadier-General Brown: In view of the promise that the company would get on with the job of putting up protective fencing and the niggardly way in which it is carrying out that promise,

and in view of the fact that all new roads are being protected, cannot the Minister do something to hurry up the railways in protecting their lines?

Captain Wallace: Of course, the whole of the railway is fenced, and my answer refers only to special fencing at particular danger points. My Chief Inspector of Railways tells me that he is satisfied with the progress which has been made by the Southern Railway in the matter.

Brigadier-General Brown: Is the Minister aware that no one else is satisfied?

Lieut.-Colonel G. J. Acland-Troyte (Tiverton—C.): Ought not the live rail to be called the rail of death?

Captain Wallace: If it lived up to its name as a death rail, it would not be much good for running trains.

Report of Advisory Council

Mr. C. C. Poole (Lichfield—Lab.), on August 2, asked the Minister of Transport when legislation might be expected dealing with the recent report of the Transport Advisory Council.

Captain Wallace: I cannot add anything to the statement which I made on May 24, 1939.

Mr. Poole: In view of the fact that the various interests concerned are already taking action which, in effect, is anticipating legislation on this matter, will not the Minister bring before the House the necessary legislation in order that we may prevent a serious departure, which is involved from the present practice?

Captain Wallace: As far as I am aware the negotiations taking place between the different interests are all to the good, and in any case I cannot go beyond the statement I have made, which is that the Government will bring forward this legislation as soon as it can.

Mr. Poole: Are we to take it from the Minister's remark that these negotiations are all to the good, that he accepts in its entirety the report of the Transport Advisory Council?

Captain Wallace: The hon. member must not understand anything of the kind. He must understand what I have said in my reply.

Sir Herbert Williams (South Croydon—C.): Should not this matter be immersed in a pool of silence?

Dukinfield Works

Mr. Wedgwood Benn (Gorton—Lab.), on August 3, asked the Minister of Labour whether he was aware that 67 men would be required to leave the Dukinfield works for York on August 14; and whether he had consulted with other departments with a view to the provision of Government contract work to make it possible to retain men at these works.

Mr. Ernest Brown (Minister of Labour): I am informed that the railway company is offering employment

to as many as possible of the workpeople employed at the Dukinfield works. As regards the second part of the question, I would refer the hon. member to the reply I gave to his supplementary question on July 20. I am, however, in close touch with other departments on the utilisation of the facilities available at Dukinfield.

Mr. Benn: While thanking the right hon. gentleman for having received a deputation, is he aware that these men are being brought in and that in many cases it is quite impossible for them to uproot their homes and move?

Mr. Brown: I am aware of that, and that is the reason why I received the deputation. We have been in contact with the department concerned to see whether these facilities can be used.

Mr. J. Tinker (Leigh—Lab.): Do consultations take place between this department and other interests when a change of works takes place?

Mr. Brown: I have no responsibility for that.

Nigerian State Railway

Mr. C. G. Ammon (North Camberwell—Lab.), on August 3, asked the Secretary of State for the Colonies if he would state the number of workers, European and African respectively, employed in the State Railway of Nigeria.

Mr. Malcolm MacDonald (Secretary of State for the Colonies): The numbers as given in the latest available reports are as follow:—

Government Railway	
European staff	309
African and West Indian salaried staff	1,919
African employees, including daily paid clerk	6,690
Labourers and porters	10,235

In addition, 19 Europeans and 2,025 Africans were employed over a period of three years on bridge construction and railway capital works.

East Coast Trains

Mr. Edgar Granville (Eye—Nat. Lab.), on August 3, asked the Minister of Transport if he was aware of the continual delays to East Coast trains due to the prolonged reconstruction of certain portions of the route; and if he was satisfied that evacuation of children on this route, involving increased train service, could be carried out without serious congestion.

Captain Euan Wallace (Minister of Transport): I presume that the hon. member refers to the services between Liverpool Street and East Anglian towns. Certain important electrification works are now in progress on these lines, and I understand that some delay is being incurred by certain trains owing to the necessity of imposing speed restrictions. It is not expected that these works would seriously affect the evacuation service, to provide for which a curtailment of the ordinary service will become necessary, and has been arranged.

Mr. Granville also asked the Minister of Transport if he would consider making representations to the L.N.E.R. to

complete the unfinished portion of the Mid-Suffolk Railway in order to provide increased direct transport facilities in an area where road communication did not achieve that purpose.

Captain Euan Wallace: The original Mid-Suffolk Light Railway was authorised in 1900, and deviations were authorised in 1903, 1905, and 1909.

The powers of construction which were granted to the Mid-Suffolk Light Railway Company lapsed 27 years ago. That portion of the line which was completed became absorbed in the L.N.E.R. under the Railways Act, 1921. Fresh powers would have to be obtained for the construction of the remainder of the lines as originally authorised.

German Travel Literature

From the London office of the German State Railway comes a batch of new travel booklets, some describing Germany as a whole, and others particular districts. "Travel in Germany" is a mine of information on everything about which the intending traveller to Germany will wish to know. Two accompanying folders give details of the train services from London to German cities and of the currency regulations. In "Interesting Events, 1939," are catalogued all the sports meetings, music festivals, national festivals, and the like to be held this year.

"England in Baden-Baden" is an attempt to analyse the reasons for the English attachment, dating from the early eighteen-hundreds, for this South German spa.

The Austrian Tyrol is very well-known to English tourists, but less well-known to them perhaps is Carinthia; both districts find their way into two new booklets. The architectural splendours of Munich are presented in a handbook of beautifully-coloured plates. Last in this series comes a useful guide to all the hotels and pensions of the Rhineland.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 31st Week			Totals to Date		
	1939	1938	Inc. or Dec.	1939	1938	Inc. or Dec.
L.M.S.R. (6,828 mls.)						
Passenger-train traffic...	1,018,000	782,000	+ 236,000	15,834,000	16,248,000	- 414,000
Merchandise, &c. ...	472,000	288,000	+ 184,000	14,599,000	14,061,000	+ 538,000
Coal and coke ...	256,000	142,000	+ 114,000	8,272,000	7,782,000	+ 490,000
Goods-train traffic ...	728,000	430,000	+ 298,000	22,871,000	21,843,000	+ 1,028,000
Total receipts ...	1,746,000	1,212,000	+ 534,000	38,705,000	38,091,000	+ 614,000
L.N.E.R. (6,320 mls.)						
Passenger-train traffic...	617,000	540,000	+ 77,000	10,251,000	10,406,000	- 155,000
Merchandise, &c. ...	330,000	232,000	+ 98,000	9,996,000	9,916,000	+ 80,000
Coal and coke ...	227,000	158,000	+ 69,000	7,808,000	7,325,000	+ 483,000
Goods-train traffic ...	113,000	390,000	+ 167,000	17,804,000	17,241,000	+ 563,000
Total receipts ...	1,174,000	930,000	+ 244,000	28,055,000	27,647,000	+ 408,000
G.W.R. (3,737½ mls.)						
Passenger-train traffic...	476,000	360,000	+ 116,000	6,701,000	6,801,000	- 100,000
Merchandise, &c. ...	227,000	106,000	+ 121,000	6,269,000	5,733,000	+ 536,000
Coal and coke ...	113,000	45,000	+ 68,000	3,518,000	3,336,000	+ 182,000
Goods-train traffic ...	340,000	151,000	+ 189,000	9,787,000	9,069,000	+ 718,000
Total receipts ...	816,000	511,000	+ 305,000	16,488,000	15,870,000	+ 618,000
S.R. (2,142 mls.)						
Passenger-train traffic...	567,000	501,000	+ 66,000	10,092,000	10,159,000	- 67,000
Merchandise, &c. ...	70,000	41,000	+ 29,000	1,915,000	1,864,500	+ 50,500
Coal and coke ...	30,000	15,000	+ 15,000	994,000	939,500	+ 54,500
Goods-train traffic ...	100,000	56,000	+ 44,000	2,909,000	2,804,000	+ 105,000
Total receipts ...	667,000	557,000	+ 110,000	13,001,000	12,963,000	+ 38,000
Liverpool Overhead ...	1,509	1,762	- 253	43,367	42,653	+ 714
Mersey (4½ mls.) ...	5,336	5,880	- 544	139,009	136,675	+ 2,334
* London Passenger Transport Board ...	570,500	563,200	+ 7,300	2,927,000	2,834,500	+ 92,500
IRELAND						
Belfast & C.D. pass. (80 mls.)	4,160	4,741	- 581	79,678	77,400	+ 2,278
" " goods	472	430	+ 42	13,461	13,261	+ 200
" " total	4,632	5,171	- 539	93,139	90,661	+ 2,478
Great Northern (543 mls.)	18,400	24,400	- 6,000	331,900	329,450	+ 2,450
" " goods	10,700	8,200	+ 2,500	312,350	271,900	+ 40,450
" " total	29,100	36,600	- 3,500	644,250	601,350	+ 42,900
Great Southern (2,076 mls.)	58,966	73,996	- 15,030	1,083,102	1,098,056	- 14,954
" " goods	39,741	32,207	+ 7,534	1,249,497	1,202,878	+ 46,619
" " total	98,707	106,203	- 7,496	2,332,599	2,300,934	+ 31,665

August Bank Holiday, 1938. Week preceding August Bank Holiday, 1939.
* 5th Week (before pooling).

British and Irish Railway Stocks and Shares

Stocks	Highest 1938	Lowest 1938	Prices	
			Aug. 9, 1939	Rise / Fall
G.W.R.				
Cons. Ord. ...	65½	25½	30½	+ 1
5% Con. Prefce....	118½	74	87½*	—
5% Red.Pref.(1950)	111½	90	94½*	—
4% Deb. ...	111	97½	97½	—
4½% Deb....	112½	100½	100	—
4½% Deb....	118½	104	105	—
5% Deb. ...	131½	119	114½	—
2½% Deb....	69½	60	59	—
5% Rt. Charge ...	129	114	110½	—
5% Cons. Guar. ...	128½	103	105½*	—
L.M.S.R.				
Ord. ...	30½	11	13	—
4% Prefce.(1923)	70½	23	40	+ 1
4% Prefce. ...	82½	43½	56½*	—
5% Red.Pref.(1955)	103½	66	78½	—
4% Deb. ...	105½	85	91½	—
5% Red.Deb.(1952)	114½	105	107	—
4% Guar. ...	102½	77½	79½*	- 1
L.N.E.R.				
5% Pref. Ord. ...	89½	31½	4½	—
Def. Ord. ...	47½	21½	27½	—
4% First Prefce. ...	68½	21	33½	—
4% Second Prefce. ...	27½	8	11½	- ½
5% Red.Pref.(1955)	97	40½	50½	—
4% First Guar. ...	97½	66½	70½*	—
4% Second Guar. ...	91½	52	61½*	—
3% Deb. ...	79½	60	61½	—
4% Deb. ...	104½	77	82½	—
5% Red.Deb.(1947)	110½	97	103½	—
4½% Sinking Fund Red. Deb.	108½	101	98	—
Southern				
Pref. Ord. ...	87	47½	63*	+ 1
Def. Ord. ...	21½	9½	13	—
5% Pref. ...	115	83	90½*	—
5% Red.Pref.(1964)	115½	98	99½*	—
5% Guar. Prefce. ...	128½	106	107½*	—
5% Red.Guar.Pref. (1957)	116	108½	106½*	—
4% Deb. ...	109½	95	97½	—
5% Deb. ...	129	117	114	—
4% Red. Deb. 1962-67	107	101½	102½	—
Belfast & C.D.				
Ord. ...	4	3½	4	—
Forth Bridge				
4% Deb. ...	102	99½	92½	—
4% Guar. ...	103½	94½	89	—
G. Northern (Ireland)				
Ord. ...	5½	2½	4	—
G. Southern (Ireland)				
Ord. ...	25½	8½	9½	- ½
Prefce. ...	35	13	10½	- ½
Guar. ...	70½	30½	26½	—
Deb. ...	83	56	47	- 1
L.P.T.B.				
4½% "A" ...	119½	107½	106½	- 1
5% "A" ...	130	117	114½	—
4½% "T.F.A." ...	108	98	102½	—
5% "B" ...	122½	105	105½	- 1
"C" ...	84	68	71½	- 1
Mersey				
Ord. ...	24½	16½	22	—
4% Perp. Deb. ...	102½	94½	90	—
3% Perp. Deb. ...	77	69	65½	—
3% Perp. Prefce. ...	66½	57	52½	—

* ex dividend

NOTES AND NEWS

New Nyasaland Railways Stock.

—At a meeting of the holders of the 5 per cent. "A" debenture stock of the Nyasaland Railways Limited, held on July 27, a resolution was passed authorising the creation of a new security to be called "C" debenture stock. This stock is for the purpose of securing advances by the Nyasaland Government in connection with the taking over by the company from the Government of the mail, passenger, and cargo services on Lake Nyasa, and the vessels and other assets used there, and to cover the cost of new craft.

Goods Train and Bus Collision at Potsdam.

—It is reported from Berlin that, on August 5, a bus came into collision with a goods train at a level crossing at Potsdam. The crossing barrier had just been raised after the passage of a passenger train when the goods train came from the opposite direction. The bus was dragged for a distance of 300 yd. Eleven of the bus passengers are stated to have died, and 16 more were injured. The keeper of the level-crossing at which the accident occurred has been arrested.

Cheap Fares to L.M.S.R. Annual Meetings.

—We understand that Councillor J. Wilson, of Accrington, who at the annual general meeting of the L.M.S.R., sought to introduce an age limit for directors of the company and other changes, has made an application to the Chancery Court. He is desirous of obtaining a legal decision as to whether a ruling given by Lord Stamp, as chairman of the meeting, that a proposal by Mr. Wilson for shareholders to be allowed to travel to the next meeting at quarter fares was out of order was within the statutory jurisdiction of the L.M.S.R. annual meeting.

First Diesel-Electric Rack Locomotive.

—Our U.S.A. contemporary, the *Railway Age*, records the building by the General Electric Company, of Schenectady, New York, of a diesel-electric rack locomotive, for the Manitou & Pike's Peak Railway, claimed to be the first of its kind in the world. The new locomotive replaces the steam engines which for almost fifty years have pushed sightseers to the summit of this famous mountain. The new locomotive weighs 20 tons, and is powered by three diesel-electric generating units. Each unit is rated 160 h.p. at 1,800 ft. above sea level, but at the top of Pike's Peak, at an elevation of 14,109 ft., the engines rate about 100 h.p.

Workmen Struck by Southern Railway Express.

—When numbers of workmen were crossing the line at Bramshott Halt, Southern Railway, on August 6, with the intention of boarding a special train from the wrong side, four of them were struck by an express, with the result that three were killed and one seriously injured. The men

were among those employed on the construction of a new military camp, near Farnborough, and five special trains are run to and from the halt daily for their transport. It is thought that those who crossed the line did so with the intention of entering the coaches from the off-side before the crowd on the platform. The inquest was held at Fleet, on August 9, and a verdict of accidental death returned in each case; no blame was apportioned.

L.M.S.R. Derailment near Saltcoats.

—At 1.20 p.m. on the afternoon of August 5, an L.M.S.R. passenger train from Glasgow Central to Ardrossan was derailed near Saltcoats station, and two passengers and the fireman of the train were killed. The driver was seriously injured, and of eight passengers taken to Kilmarnock infirmary for treatment, six were detained, of whom four were injured seriously. An inquiry into the accident was opened by Colonel A. H. C. Trench, on August 9. An official statement issued by the L.M.S.R. added that the engine and five carriages left the rails, involving serious damage to rolling stock and permanent way, the engine being thrown down the embankment along with two of the carriages at the front of the train.

Baltimore & Ohio Railroad Finance.

—Under its plan for modification of interest charges and maturities dated August 15, 1938, the Baltimore & Ohio Railroad Company has paid the full amount of interest due on August 1 on its five-year 4½ per cent. secured notes. The plan provides that the principal of these notes (\$50,000,000 outstanding), which matured on August 1, 1939, be extended for five years, with interest at 4 per cent. per annum. Reference to the plan was made in our issue of March 10 last, at page 398, and on May 12 (page 787) we recorded that holders of 81.72 per cent. of outstanding bonds had assented to the scheme. We now learn that, at the close of business on July 25, the assents totalled 85.94 per cent.

Imperial Airways Empire Bookings.

—Imperial Airways Limited announced on Tuesday, that it was obliged to reduce substantially the passenger accommodation on its 22,000 miles of Empire routes. As this was interpreted in some quarters as a refusal to book any more passengers by these routes in the next few months, the company issued a statement on Wednesday to the effect that all definite bookings already made are still valid, and that, while there has been a drastic and inevitable curtailment of the accommodation for passengers travelling from London on the Empire routes, the company intends to make the fullest use of the accommodation that is still available. Passengers who are travelling northwards or westwards to London

will find that the available accommodation is far less restricted. There is also a certain amount of accommodation for passengers who are travelling between intermediary stations on the Empire routes. The immediate cause of the restriction on passenger bookings is the increase in mail loads and the decision to carry a greater margin of fuel on the Empire flying boats.

The Railway Excursion.

—On Bank Holiday (August 7), when thoughts turned naturally to excursion traffic, *The Times* published a contribution on the early history of railway excursions, claiming August 7 as the centenary of this "holiday boon." In support of this it stated that in 1839 the organisers of a church bazaar at Grosmont, fearing a poor attendance, asked the Whitby & Pickering Railway to issue cheap tickets; and so on August 7 and 8 of that year the citizens of Whitby and Pickering journeyed to Grosmont in horse-drawn trains at reduced fares, fore-runners of the army of holiday-makers who travel by cheap excursion train from London and other big cities to health and pleasure resorts.

The Refreshment Carriage.

—In a letter to *The Times*, published on August 8, Canon Reginald B. Fellows pointed out that the first dining car in England was built by the American Pullman Car Company for the Great Northern Railway, and a letter from the European Manager of the Pullman Company regarding its construction was published in *The Times* of June 14, 1879. The car was ready for use in the autumn of that year. Canon Fellows added that it was of historical interest to note that an engineer of the London & Birmingham Railway, Lieutenant Peter Le-count, R.N., in his "Practical Treatise on Railways," published as far back as 1839, suggested and gave a short specification and plan of a "refreshment carriage" with a buffet. The carriage was to be reached from any part of the train, as sliding stages made communication between each carriage possible.

The Sleeping Car.

—In August, 1859, eighty years ago, a sleeping car appeared on the Chicago & Alton Railroad of the United States, a great advance on the primitive facilities previously available. Some years later the Pullman Palace Car Company was formed and thus began the era of sleeping car travel. The first European sleeping car train was introduced in May, 1873, between Paris and Vienna, via Strasbourg, and a recent statement issued by the L.N.E.R. points out that in the same year on September 1, on what is now the East Coast main line of the L.N.E.R., the first British sleeping car was introduced. These pioneer British sleeping cars, built by a Manchester firm, ran between King's Cross and Glasgow. In each compartment three beds were provided, brought into use by pulling down the backs of the seats. Today the L.N.E.R. runs 129 sleeping cars.

OFFICIAL NOTICES

OFFICIAL ADVERTISEMENTS

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

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CONTRACTS AND TENDERS

The Société Alsthom, of Paris, has received an order for six double-bogie 600-h.p. diesel-electric locomotives for the Dakar-Niger Railways, in French West Africa.

The Hunslet Engine Co. Ltd. has received an order from the Gondal Railway Administration for one boiler for an "F" class 0-6-0 locomotive, to be supplied to the inspection of Messrs. Robert White & Partners.

Craven Brothers (Manchester) Limited has received an order from the Assam-Bengal Railway Administration for one horizontal slot drilling and key-seating machine to be supplied to the inspection of Messrs. Rendel, Palmer & Tritton.

D. Wickham & Co. Ltd. has received a repeat order from the South African Railways & Harbours Board for six double-gear pump trolleys.

The Associated Equipment Co. Ltd. has received an order from the London Passenger Transport Board for 188 Regent type buses. The new vehicles are to be equipped with direct-injection oil engines with power-operated braking and gear-changing, these features being now standard on London buses.

G.W.R. New Works

The Great Western Railway is to put in hand the following works:—

Cosford Aerodrome Halt.—Facilities at this halt, where traffic has rapidly increased, are being improved by the construction of booking, waiting, parcels, lavatory and cycle storage accommodation.

Kingswear.—The timber dolphins which form guides to the ferry pontoon landing stage at Kingswear are to be reconstructed.

Swindon Locomotive Works.—The tool room ("O" shop) is being equipped with a special modern prismatic optical instrument, made by Zeiss & Co., which can measure accurately 1/100,000th of an inch. The instrument is for use in gauge making, screw thread measuring and other work of very fine limits.

Danbyraig, Portmadoc and Truro.—Protection from the weather is to be provided for staff coal engines at these stations.

The following bridgeworks are being undertaken:—

Reconstruction and strengthening of the bridge carrying a public road over the railway immediately on the Brent side of Wrangaton station is being effected at the request of the Minister of Transport.

In connection with the new North Acton to Ruislip electric lines the under-bridges at Alperton Lane, Horsenden Lane and Oldfield Lane are to be reconstructed. Arrangements have been

completed whereby they will be lengthened at the same time, at the expense of the Ealing Corporation.

Underpinning of two bridges carrying the railway over the River Wye at Monmouth is being undertaken by the Company at the request of the River Wye Catchment Board, in connection with flood relief works.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department (Hardware Section), Simla, receivable by September 18, for the supply of grinding wheels required for the East Indian, Great Indian Peninsula, and North Western Railways, at Calcutta, Bombay, and Lahore or Karachi, on a running contract basis during the period December 1, 1939, to November 30, 1940.

Tenders are invited by the Director-General, India Store Department, Belvedere Road, Lambeth, London, S.E.1, receivable by August 18, for the supply of 450 steel tyres for carriages and wagons.

The Indian Stores Department is calling for tenders (Tender No. H. 1185) for the supply and delivery, as and when required during the period December 16, 1939, to December 15, 1940, of quantities of railway track tools including beaters, rakes, shovels, crowbars, hammers, rail gauges, and pick-axes. Tenders should be addressed to the Indian Stores Department, Hardware Section, Simla, to be received by August 30.

Tenders are invited by the Egyptian State Railways Administration for the

supply of 13,600 kg. black mild steel nuts, 5,695 kg. rivets, 25,000 kg. galvanised mild steel stay strand wire, 13,500 kg. zinc ingots, 200 brass sheets, 45 kg. brass tubes, 550 kg. zinc sheets, 3,500 kg. lead sheets, 1,006 kg. solder resin, 2,000 kg. phosphor copper, 7,525 kg. spring steel, 190 kg. copper wire, 27,840 metres copper wire, 27,750 metres cable, and 1,600 ft. octagonal and hexagonal steel. Further particulars are obtainable from the Chief Inspecting Engineer's Office, 41, Tothill Street, Westminster, London, S.W.1.

Tenders are invited by the Egyptian State Railways Administration, receivable at the General Management, Cairo station, by August 22, September 2, 4, and 11 respectively for the supply of one wagon wheel lathe, one centre lathe, one pneumatic power hammer, and one air compressor for pneumatic power hammer. Firms interested may obtain particulars from the Chief Inspecting Engineer's Office, 41, Tothill Street, Westminster, S.W.1.

Tenders are invited by the Egyptian State Railways Administration, receivable at the Stores Department, Saptieh, Cairo, by September 14, for the supply of 220,200 bolts and nuts.

Tenders are invited by the Egyptian State Railways Administration, receivable at the General Management, Cairo station, by September 19, for the supply of 360,000 or 480,000 metric tons of coal.

The closing date for receipt in Johannesburg by the South African Railways and Harbours Board of tenders for the supply of locomotive boilers, referred to in our issue of May 26, p. 882, has been extended to August 21.

The Lost Luggage Vans

The newspapers have this week been following the adventures of two luggage vans bound for Scarborough, L.N.E.R., which failed to reach their destination. Equal attention has been paid to the clothing and equipment problems of holidaymakers whose luggage, having been sent "in advance," was in the missing vehicles. The vans left Birmingham and Leicester respectively at the week-end. When they had not turned up by Tuesday, the railway agreed to reimburse their bereft clients for any necessary purchases they had been obliged to make, and the *Yorkshire Evening Post* described the scenes at Scarborough station when

it was besieged by a crowd presenting receipts for articles bought. A waiting room was converted into an office to deal with the emergency and relieve pressure on the ordinary enquiry office. At the same time Mr. C. M. Jenkin Jones, Divisional General Manager, announced to the *Yorkshire Evening Post* his intention of offering a reward for discovery of the vans—a reward confined to railway servants for fear of amateur sleuths among the public trespassing on railway property. Both vans were located in Whitemoor yard, Cambridgeshire, on Wednesday, but not before the railway had been involved in an outlay estimated at £200.

Railway Share Market

Uncertainty as to the next developments in the political situation entirely dominated sentiment on the Stock Exchange this week, and it is therefore hardly surprising that the volume of business in all sections of the stock and share markets remained at a very low ebb. The prevailing tendency was to reduced prices, but no heavy selling was reported, and it is apparent that investors are continuing to take a calm view of the position and outlook.

Owing to surrounding market conditions Home Railway securities failed to show much response to the good impression created by the past week's traffics, which exceeded general market estimates. Moreover, the tendency has been to await the outcome of the meeting between the companies and the railwaymen to discuss the wages claims. In view of the expected further acceleration in industrial activity owing to armament and other Government work, the traffic outlook continues to be viewed as encouraging. Nevertheless it is not generally expected that L.M.S.R. ordinary and Southern deferred will be able to return to the dividend list in respect of the current year. Whether market estimates of dividend payments on

L.M.S.R. 1923 preference, Great Western ordinary and L.N.E.R. first preference are realised may, of course, turn on the outcome of the wages claims of the unions.

Following the sharp declines shown last week, small gains have been recorded by some of the junior stocks. Great Western ordinary, for instance, was 30½, compared with 29½ a week ago, but the 5 per cent. preference declined further from 88½ to 87 and the 4 per cent. debentures were fractionally lower at 97½. L.M.S.R. ordinary was better at 13½, compared with 12½, but the 4 per cent. preference was 56½, which compares with 57 a week ago. On the other hand, the 1923 preference attracted a certain amount of speculative attention, and showed improvement from 39 to 40. The 4 per cent. guaranteed, which naturally carries excellent investment merits, was a point down at 80, at which an attractive yield of 5 per cent. is offered. The 4 per cent. debentures were obtainable at 92½ to give a yield of nearly 4½ per cent. L.N.E.R. first preference was slightly better on balance at 33½, but the second preference declined further to 10½. The second guaranteed was lower at 61, but the first

guaranteed at 70 was the same as a week ago, and the yield in both cases would appear to be unduly generous. The 3 per cent. debentures have been obtainable at 62, at which the yield is nearly 4½ per cent. Southern deferred was fractionally better at 13, as was the preferred stock at 63, compared with 62½ a week ago. The 4 per cent. debentures were on offer at 98 to yield approximately 4½ per cent. The 5 per cent. preference stock was lower at 90½ despite the attractive yield.

London Transport "C" reflected the reactionary trend of markets with a decline from 72 to 70½, sentiment having been influenced by talk of large expenditure that may have to be faced for A.R.P. equipment and similar purposes. Market estimates in this connection are, however, a matter of guesswork, and there seems no reason to anticipate that special expenditure of this kind will affect dividend prospects of the "C" stock. Argentine and other foreign railway securities were mostly lower on balance, but they were again very inactive, and with few exceptions it would appear that prices were not adequately tested. Leopoldina debentures were better at 10½. Canadian Pacific common shares and preference stock were slightly lower in sympathy with the trend of Wall Street.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1938-39	Week Ending	Traffic for Week		No. of Weeks	Aggregate Traffic to Date			Shares or Stock	Prices						
			Total this year	Inc. or Dec. compared with 1938		Totals		Increase or Decrease		Highest 1938	Lowest 1938	Aug. 9, 1939	Yield % (See Note)			
						This Year	Last Year									
South & Central America	Antofagasta (Chili) & Bolivia	834	6.8.39	10,730	+	1,150	31	399,220	482,990	-	83,770	Ord. Stk.	14 61½	71½	6 31½	NH
	Argentine North Eastern ..	753	5.8.39	11,935	-	714	6	58,473	62,531	-	4,058	Ord. Stk.	82	75	62½	6½
	Argentine Transandine ..	—	—	—	—	—	—	—	—	—	—	A. Deb.	8	7	7	NH
	Bolivar	174	July 1939	4,200	+	550	30	29,150	26,250	+	2,900	6 p.c. Deb.	10	4	6	8½
	Brazil	—	—	—	—	—	—	—	—	—	—	Bonds.	61½	31½	31½	NH
	Buenos Ayres & Pacific ..	2,801	5.8.39	76,799	+	806	6	395,162	390,820	+	4,342	Ord. Stk.	15½	8	11	NH
	Buenos Ayres Central ..	190	22.7.39	\$134,400	+	\$22,900	4	\$409,600	\$405,200	+	\$4,400	Mt. Deb.	175½	81½	7	NH
	Buenos Ayres Gt. Southern	5,082	5.8.39	118,176	+	4,405	6	609,988	663,028	-	53,040	Ord. Stk.	125½	5	6	NH
	Buenos Ayres Western ..	1,930	5.8.39	38,275	+	2,853	6	219,294	201,922	+	17,372	"	131½	55½	61½	NH
	Central Argentine ..	3,700	5.8.39	134,246	+	31,253	6	688,989	549,771	+	139,218	"	3	11½	1	NH
	Do	—	—	—	—	—	—	—	—	—	—	Ord. Stk.	28	22½	22½	8½
	Cent. Uruguay of M. Video	972	29.7.39	16,357	+	265	5	71,529	72,941	-	1,412	Ord. Stk.	105½	104	102½	5½
	Costa Rica	188	May 1939	24,302	+	2,198	48	245,516	283,030	-	37,514	Stk.	71½	31½	4	NH
	Dorada	70	June 1939	13,800	-	2,700	26	80,600	95,700	-	15,100	1 Mt. Db.	31-	1/-	14	NH
	Entre Rios	810	5.8.39	18,759	+	1,420	6	91,879	83,777	+	8,102	Ord. Stk.	6d.	6d.	1½	NH
	Great Western of Brazil ..	1,092	5.8.39	5,000	+	500	31	255,200	208,600	+	48,600	Ord. Sh.	8	61½	71½	NH
	International of Cl. Amer.	794	June 1939	\$433,084	+	\$7,473	26	\$3,234,011	\$3,010,488	+	\$223,523	1st Pref.	4	1	1	NH
	Interoceanic of Mexico ..	—	—	—	—	—	—	—	—	—	—	Ord. Stk.	7½	19½	19½	7½
	La Guaira & Caracas ..	22½	July 1939	6,490	+	1,145	30	41,920	35,580	+	6,340	Ord. Stk.	52½	19½	19½	7½
	Leopoldina	1,918	5.8.39	23,569	-	327	31	601,239	591,143	+	10,096	Pr. Li. Stk.	60	55½	40½	14½
Mexican	483	31.7.39	\$467,200	-	\$79,300	5	\$1,245,200	\$1,223,400	+	\$21,800	Pr. Li. Stk.	55½	1½	1	NH	
Midland of Uruguay ..	19	June 1939	6,839	-	594	32	103,758	111,938	-	8,180	Ord. Sh.	23	20	19½	NH	
Nitrate	386	31.7.39	4,754	+	455	30	70,318	90,505	-	20,187	Ord. Sh.	64	28	21½	9½	
Paraguay Central ..	274	29.7.39	\$3,218,000	-	\$126,000	5	\$14,966,000	\$14,782,000	+	\$184,000	Ord. Sh.	15½	1	1	10	
Peruvian Corporation ..	1,059	July 1939	64,406	-	9,649	5	64,406	74,055	-	9,649	Ord. Stk.	35½	12	3½	NH	
Salvador	100	29.7.39	\$11,800	-	4634	5	\$44,932	\$48,623	-	\$3,691	Pr. Li. Db.	23	20	19½	NH	
San Paulo	153½	30.7.39	33,313	+	3,521	30	953,390	989,933	-	36,543	Ord. Stk.	64	28	21½	9½	
Taital	160	July 1939	1,555	-	1,955	5	1,555	3,510	-	1,955	Ord. Sh.	15½	1	1	10	
United of Havana ..	1,353	5.8.39	16,100	-	2,785	6	82,193	88,214	+	4,021	Ord. Stk.	35½	12	3½	NH	
Uruguay Northern ..	73	June 1939	694	-	207	52	11,341	11,259	+	82	Deb. Stk.	2	1	2	NH	
Canada	Canadian National ..	23,762	31.7.39	1,044,278	+	97,692	30	20,649,035	19,387,255	+	1,261,780	—	—	—	—	—
	Canadian Northern ..	—	—	—	—	—	—	—	—	—	4 p.c.	Perp. Dbs.	72	60	68½	51½
	Grand Trunk	—	—	—	—	—	—	—	—	—	—	4 p.c. Gar.	104	90	96½	41½
	Canadian Pacific ..	17,171	31.7.39	815,400	+	65,400	30	14,693,000	14,475,600	+	217,400	Ord. Stk.	87½	41½	41½	NH
India	Assam Bengal	1,329	10.7.39	37,605	+	2,924	14	390,321	377,876	+	12,445	Ord. Stk.	81½	70	71½	45½
	Barsi Light	202	20.7.39	2,370	-	787	16	38,632	52,470	-	13,838	Ord. Sh.	60½	54½	50½	51½
	Bengal & North Western	2,112	20.7.39	64,543	-	1,511	16	848,821	938,124	-	87,303	Ord. Stk.	311	278	253	71½
	Bengal Doars & Extension	161	20.7.39	3,159	-	758	16	32,652	39,743	-	7,091	"	89	83	81½	71½
	Bengal-Nagpur	3,267	20.7.39	179,250	+	17,811	16	2,402,327	2,215,546	+	186,781	"	95½	90	90½	47½
	Bombay, Baroda & India	3,085	20.7.39	199,725	+	10,650	16	2,708,025	2,768,025	-	60,000	"	112½	95	104½	53½
	Madras & Southern Mahratta	2,967	20.7.39	147,525	+	2,090	16	1,898,334	1,811,971	+	86,363	"	108	97	100½	71½
	Rohilkund & Kumaon ..	546	20.7.39	11,354	-	808	16	172,789	191,509	-	18,720	"	308	285	261	67½
South Indian	2,531½	10.7.39	115,226	+	7,711	14	1,183,050	1,178,227	+	4,823	"	104	101	95½	51½	
Various	Beira-Umtali	204	May 1939	86,259	-	—	35	636,331	—	—	—	—	—	—	—	—
	Egyptian Delta	623	10.7.39	5,434	+	451	14	50,206	49,939	+	267	Prf. Sh.	7½	5/6	1½	NH
	Kenya & Uganda ..	1,625	May 1939	206,557	-	11,295	21	1,220,870	1,309,332	+	88,462	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	—	—	B. Deb.	49	41	42½	81½
	Midland of W. Australia	277	June 1939	11,544	-	4,418	52	177,307	180,121	-	2,814	Inc. Deb.	93½	89	89	41½
	Nigerian	1,900	24.6.39	23,086	-	8,584	13	348,743	382,787	-	34,044	—	—	—	—	—
	Rhodesia	2,442½	May 1939	365,832	-	—	35	1,880,230	—	—	—	—	—	—	—	—
	South Africa	13,284	22.7.39	654,504	+	28,311	17	10,420,611	9,846,264	+	574,347	—	—	—	—	—
Victoria	4,774	May 1939	800,924	-	54,892	48	8,666,883	9,084,032	-	417,149	—	—	—	—	—	

NOTE. Yields are based on the approximate current prices and are within a fraction of 1½

† Receipts are calculated @ 1s. 6d. to the rupee.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being over estimated. The statements are based on the current rates of exchange and not on the par value